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The Journal of the Fire Protection Profession Since 1877

VOL. 85 NO. 12 DECEMBER, 1932 Member A.B.C.-A.B.P.

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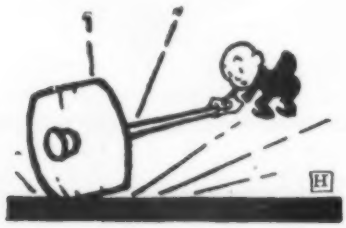

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● It's high time the citizens of every community were awakened to the serious dangers of an inadequately equipped, undermanned fire department. Let's give it to 'em straight from the shoulder.

The Publishers

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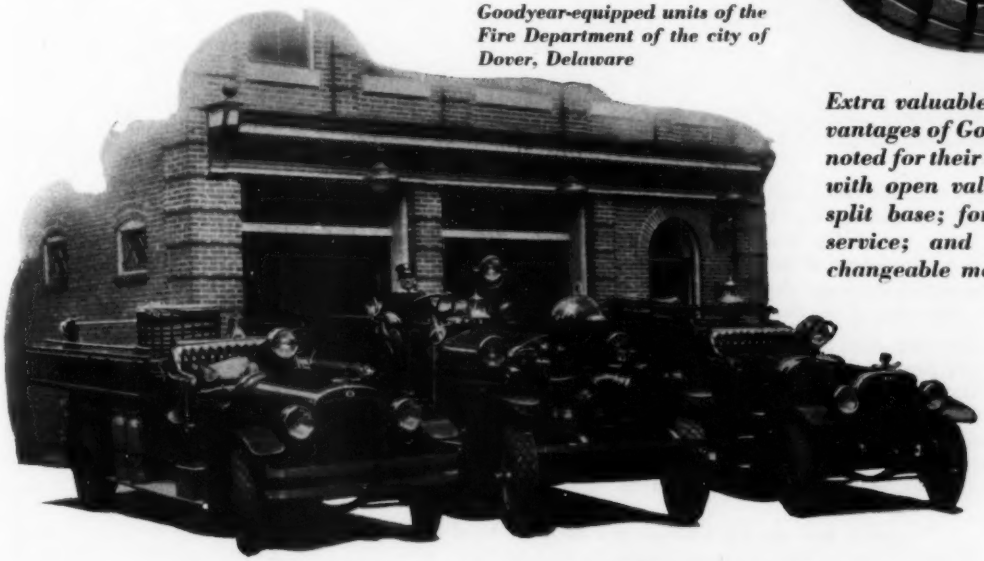

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This famous old landmark, nestling in the heart of downtown Cleveland, has been thrice visited by fire. In 1857, twenty-five years after it was built, the church was razed by fire. Again in 1884 and 1931 fire destroyed portions of it.

Following the last fire, the pastor took every precaution to protect it from future destruction. A sprinkler installation was completed in August, 1932, and immediately the system was hooked up to a Gamewell SPRINKLER WATCHMAN (a Gamewell master fire alarm box) which in turn is connected up to the Cleveland fire alarm headquarters, so as to notify the fire department instantly should a sprinkler head open for a fire.

Cleveland's municipal officials have shown a fine cooperative spirit in protecting this famous old church. Likewise they are protecting the city's tax income and taxpayers by encouraging owners of sprinklered property to install Gamewell fire alarm boxes to supervise their sprinkler systems in this most *efficient, direct* and *economical* manner.

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FIRE ENGINEERING

The Journal of the Fire Protection Profession

Volume 85 DECEMBER, 1932 Number 12

With the Editor

The City Must Pay— But How?

In a very able address on the maintaining of fire department efficiency presented before the San Diego Convention of the International Association of Fire Chiefs, on October 20, Jay W. Stevens, California State Fire Marshal and Executive Secretary of the Association, said:

"It is sometimes rather difficult to convince officials of the danger of false economy in relation to the fire department, but a casual study should convince anyone. A city must pay for its protection, and it is just a question of *how* it pays—whether it is for an efficient, well-equipped, well-manned, and well-trained fire department, with the resultant low fire loss, low insurance cost, and a high degree of safety, or for an undermanned, under-equipped, poorly-paid and poorly-trained fire department, promoting a high loss ratio, a high insurance cost, and a lesser degree of safety."

That sums up the question concisely, yet completely. If a city weakens its fire defenses, increased fire losses will be the ultimate result. The city may get by for a while with companies of reduced strength, or fewer companies, or with old and faltering apparatus, but the day of reckoning will surely come, the day when the department will find itself faced with a fast-spreading fire of large dimensions and for which it is no match.

That a department has established a good record in keeping down fire losses is no reason for weakening it through reduction of personnel, failure to replace obsolete apparatus or closing up of stations. For a good fire-fighting record is primarily the result of department strength plus intelligent leadership.

Fire insurance rates are determined by fire loss records. Just as low losses over a period of years bring low insurance rates, so must high losses result in increased insurance costs. Thus cutting fire department appropriations may be expected to bring about higher insurance expenditures far out of proportion to the saving in fire department maintenance costs.

In addition, loss of industrial establishments by fire produces increased unemployment, and therefore decreased payrolls, which represent a direct financial loss to the city and to local business as well.

Truly, a city must pay for fire protection, but it pays to provide the best that can be secured.

Fred Sheppard

Four Hundred Fire-Fighters Tried to Prevent the Spread of This Fire to Other Wells in the Santa Fe Springs, Cal., Oil Field

Fighting the Oil Well Fire

By FRANK B. WILCOX,
Chief of Fire Department,
Culver City, Cal.

THERE are many opinions as to the proper methods to follow in handling oil well fires. It is not the intention of the article to describe the best or the only plan to follow, but rather to describe the means used by the fire departments on the Pacific Coast. Fire department officers located in areas in which oil fields are located, have after years of experience and experimentation, adopted methods which have proven best for them under actual local conditions.

The oil industry with its manifold ramifications is California's largest, representing as it does an investment of well over ten hundred million dollars, this amount increasing by leaps and bounds each year.

As the field is the source of supply for this huge business, it is easy to comprehend that serious uncontrolled fire in any field would strike at the very heart of the industry.

As an army is said to march on its stomach, so the oil industry marches on the oil from its wells. Take the food from the army, or the oil from the industry, and they would both stop going forward.

Oil well fires have been known to burn for months before being extinguished, this being true particularly where large quantities of gas under pressure are present, the cost of extinguishment runs as high as $250,000 for a fire in one well. Huge losses sometimes occur, as in the case of one such fire in a field in Rumania, where the loss was in excess of $8,000,000.

All stages of the oil industry from the well to the consumer present grave hazards. In the field, the very nature of the business, and methods of operation preclude the possibility of completely eliminating natural hazards, as the presence of closely spaced derricks, oil soaked ground, frame construction, frame sheds and other materials which may become easily ignited, would cause very rapid spread of fire. There are also always present throughout the fields, numbers of oil tanks, which of themselves are a serious hazard when fire breaks out at any well.

Complete prevention of fire in an oil field is impossible, and it is the belief of the writer that fire prevention policies should be those which can be practically carried out. They should be made where they will save in

probable loss and damage by fire which they will prevent in the long run to return a satisfactory profit on the necessary investment.

Again, inasmuch as some fields are remote from adequate supplies of water, the difficulty of fire control, the cooling down and covering exposures by this means becomes difficult and dangerous.

In an oil field, danger is always at hand. Danger from explosion, from falling derricks, from rapid spread of flaming streams and pools of oil, from spread of fire by explosion, from heat waves, or from radiation of heat is always present. Derricks are often so closely spaced that their footings almost touch each other, thereby greatly increasing the hazard.

The wise Fire Chief within whose territory an oil field is located will not hesitate to consult and work with the safety engineers of the oil companies. Protection from fire and explosion is their specialty, and they are always willing and anxious to cooperate with the Chief from every angle. Do not make the mistake of misunderstanding them. They know their business.

Inventory of Foam Powders

It is vitally important that the Fire Department should know the amount and location of all foam powder immediately available at the field, as well as where additional supplies of it can be procured and brought up within the least possible time. Many tons of it may become necessary. The location of foam generators, tractors, steam or gasoline driven shovels, plows, scrapers, portable derricks, cranes, and fire shields should be known as well as oil well supplies such as pipe and fittings of all sizes for the possible necessity of placing emergency oil, water or steam lines. The location of portable oil pumps should also be known. Then, too, steel cable and blocks, at times, are indispensible.

The location and possibilities of all machine shops in or about the field should be known, as well as all welding and cutting outfits. All these things may enter into the business of fighting the oil well fire.

Not only should the location and availability of all these supplies and pieces of equipment be known, but it is necessary for one who is intrusted with the control of an oil well fire to have knowledge of the limitations and advantages of each piece of equipment, that they may be used in the proper manner and at the proper time. A thorough understanding of the equipment used in drilling wells and producing oil and gas is also of the utmost advantage.

Oil Fires Bring Great Responsibilities

A great responsibility is placed upon all fire department forces engaged in operations at oil fires from the highest ranking officer to a member of the lowest grade, and it behooves each and every member to be on the alert to avoid any false move or improper action which might increase the hazard.

Examples for this paper have been taken from fires that have occurred in the Santa Fe Springs oil field which is in Southern California, not far from Los Angeles.

This field is covered by what is commonly known as the Los Angeles County Fire Department, and is perhaps the most phenomenal oil field in the world, in that it has many sands of high pressure gas, producing a light gravity crude oil. It covers an area of approximately two square miles, and is congested as it contains about one thousand wells, and about eight hundred derricks, some steel, some wood. It has an assessed valuation of $17.000.000 and represents an investment of over $150,000,000.

Battalion Chief G. G. Griswold of the Los Angeles County Fire Department for years was on active duty in this field, worked in accord and with the complete cooperation of the oil company engineers, and cannot be given too much credit for the help and information he has given the writer of this paper.

Parts of an Oil Derrick

A description of certain parts of an oil derrick, certain mechanical devices used, and certain pieces of equipment used in case of oil well fires may be of help to you who are not familiar with this phase of fire fighting.

Derrick floor—Platforms of heavy plank at base of derrick, supported by large timbers on which the machinery used in drilling is mounted.

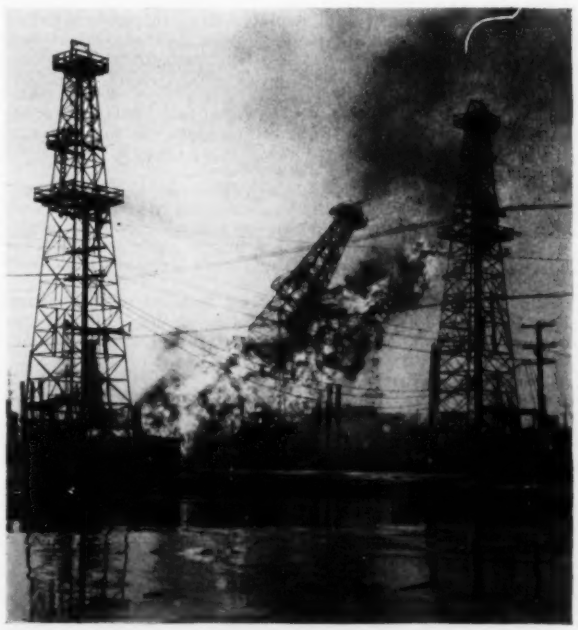
Cellars—Excavation under floor surrounding casing.

Gas Trap—As the name indicates—a device or chamber, through which an oil line runs which separates the gas from the oil.

Christmas Tree or Control Head—A device designed to divert the flow of oil and gas coming from the well casing, fitted to its top, and consisting of a master gate above which is a four way forged steel T with gated or valved openings to which pipes can be connected.

Fog, Spreader or Spray Nozzles—Nozzles which by nature of their construction throw under high water pressure an atomized fan shaped water spray or fog.

Oil fires are really vapor fires fed by evaporation from the oil surfaces, burning just above the surface instead of at some remote localized point. The heat of the oil greatly accelerates the evaporation. An oil fire can be extinguished (if the fire is not too large for the available equipment) either by cooling, excluding air (smothering) or by stopping or greatly retarding the supply of vapor to the fire (starving). Any of these methods might be used to the exclusion of the others. However, any type of equipment designed primarily for extinguishing fires, using one method, will of necessity operate at a great disadvantage on a fire which requires another method, or a combination of both methods to extinguish. The procedure which may



Fierce Heat of Oil Fire Causes Derrick to Topple

be used in attacking an oil fire by these methods is outlined as follows:

(1) Cooling—In order to extinguish an oil fire by cooling the oil the temperature must be reduced below its flash points. This may be accomplished by means of a stream or streams of water directed on to the oil surface.

(2) Smothering—In an oil fire of any considerable size it is practically impossible to so completely cut off the air that the fire will be smothered. This usually is accomplished in incipient fires only.

(3) Starving—This is the most effective method used in all oil fire fighting. It is accomplished by first applying water in the form of a fog and when the oil surface has been cooled and the heat wave in the oil reduced to a minimum, foam is then applied. (Care is taken not to distintegrate foam with fog when the change is made.) This greatly retards exaporation which is furnishing the fire with fuel and vapor, in two ways: It blankets the free surface from the heat waves of the flames above and thus stops boiling of the surface oil, and prevents boil-overs.

(To be concluded)

A FIRE FAN LEFT FOR SAN DIEGO, BUT SAN DIEGO LEFT ITS MARK

Paxton Mendelssohn, Detroit Fire Fan, Again Gives Vent to His Thoughts and Enthusiasm During the I.A.F.C. Gathering

He apologizes to O. O. McIntyre, Shepperd, Case and everybody else who have permitted this outburst.

CALIFORNIA, here we come! Or should I say, we came, we saw, and were conquered—conquered by the hospitality and sunshine. It is everywhere in Southern California. I always enjoy Fire Chiefs' Conventions. This meeting was well attended, considering the times, and the discussions and papers were interesting.

Most of the old gang on hand. . . Made you think of last year in Havana. . . John Evans of New Orleans, looking younger than ever, despite his forty years of service. . . Again, Jay Stevens and Dad Mulcahey right on the job. . . Did any one miss meeting the Kingfish, meaning Julius Kaufman, the untiring fire alarm dispatcher of the San Diego Department? . . And the girls—otherwise the San Diego firemen's wives. . . Never saw a Fire Department where the boys pick them so young and pretty and keep them that way. Must be the climate. . . We must not overlook the obliging young ladies in the U. S. Grant Hotel lobby, who filled out the registration cards, re-wrote speeches, and did rush typewriting jobs at any minute. Particularly blond Alice Craig, San Diego's swimming champ, and demure little Marian Johnson.

The pier is an excellent place to hold a convention—light, well ventilated, and roomy, and you can always watch a submarine or destroyer coming or going. . . Did you notice the navy coming ashore brisk and bright every morning, but how dejected they looked at nightfall returning to their ships?

Bert Case still taking pictures and Bessie Shepperd (Mrs. Fred) always having a terrible time keeping track of her husband. . . A convention would not be complete without the smiling countenance of Father Coleman of Chicago. . . Ralph Scott of Los Angeles in his immaculate tan suit. . . Again, we must mention dignified Art Sullivan of the American-LaFrance, not to overlook his arch competitor Lester Stevenson—Stevey to most of us—of the Seagrave Corporation, accompanied by his grand old boss, Julius Stone, who prefers to be known as Stonie. . . Whataman!

Who will deny that the dinner, entertainment, and cabaret at Agua Caliente was the best ever? . . I mentioned California hospitality just takes one in—so does Agua Caliente. . . . Will some one please cash a check. . . I know! . .Chief Louis Almgren of San Diego was a wonderful host, working all the time to make our stay enjoyable.

Like to mention everyone, but space hardly permits. . . However, there was George Hedden of Buffalo, a most genial companion. . . Dick Smith of Pittsburgh, the new President of the Association. . . Good luck to you, Dick. . . Chief Brosnan of Albany, the retiring President. . . Chief Brennan of San Francisco. . . Bogan of Baton Rouge. . . Coop of Pasadena. . . Dynamic Healy of Denver, who was never quiet a minute. . . Then we saw Herring of Murphysboro, Illinois; Derra of Schenectady; as well as Selden Allen of Brookline and Chief Towey of Newark, the new officers coming up the line. . . Met Chief Dugan of Palo Alto, and did you notice the boys from Cheyenne, Laramie, and Rawlins in the ten gallon hats? . . Hope I am not insulting anyone's feelings by omitting their names—just can't remember everyone. . .

We must mention the San Diego Firemen's Band—those fellows and girls in their caballero costumes, who worked untiringly at all times for us. . . The San Diego firemen are a good bunch—neat, courteous, and efficient.

Did you see Bob Anderson of Dayton—the Rotary man—telling stories and strutting his magic? . . And those Mexican bomberos (Spanish for firemen) resplendent in their black, red, and gold uniforms with Sam Browne belts. . . Who could miss Chief Gambrell of Dallas—is it 6 feet 10 inches or 7 feet in his stocking feet—anyway the biggest man at the convention. . . As usual, Joe Green, the big shot of the Eureka Fire Hose Company, was among those present, and we also saw Franklin Wentworth of the National Fire Protection Association.

San Diego is a beautiful city. . . The home folks were just fine, and I had a good time. . . Hope you did. . . I'll be seeing you again next year, sure.

Chief Daggett Honored by Friends

As a tribute to Chief William H. Daggett, of the Springfield, Mass., Fire Department, on the eve of his retirement after fifty years service, the November meeting of the Fire Chiefs' Club of Massachusetts was held at the Highland Hotel in Springfield, November 16. Chief Daggett was presented with a framed testimonial. Chief David A. DeCoursey, of Winchester, presided, and there was a large attendance.

Chief Selden R. Allen, of Brookline, First Vice-President of the International Association of Fire Chiefs, described the recent convention in San Diego, Cal. Chief Robert L. Tappin, of Gardner, and Chief John W. O'Hearn, of Watertown, also related incidents of the convention and Chief O'Hearn read a brief paper on "Maintaining Fire Department Efficiency" written by Jay W. Stevens, State Fire Marshal of California.

Chief George L. Johnson, of Waltham, paid an eloquent tribute to Chief Daggett and presented an illuminated scroll in behalf of the club. The scroll read as follows: "Half Century Certificate, to William Henry Daggett, Chief of the Springfield Fire Department, in recognition of a lifetime devoted to the protection of life and property in your native city—a proud record, a rare privilege, and a splendid achievement—in admiration of your steadfast and courageous adherence to the highest ideals of a noble profession, in appreciation of your hearty co-operation and wise counsel by which we have been enriched and in honor of your half century of service, the Fire Chiefs' Club of Massachusetts presents you this token of their esteem and affection."

Just below this inscription was Chief Daggett's service record as follows: "Call man, Nov. 4, 1882; Assistant Foreman, May 18, 1885; Foreman, Jan. 1, 1889; Deputy Chief, March 1, 1894; Chief, April 1 1908."

An interesting address was given by Elmer S. Stack Consulting Engineer, and specialist in hot water supply systems, who illustrated his talk with lantern slide views showing the damage caused by explosions of hot water boilers.

Fire Marshal Hurley and Mr. Miner, Chairman of the State Fire Prevention Committee, presented the proposed regulations for installation of oil burners and tanks and accepted suggestions regarding the matter that were made by various members of the club.

A welcome was extended to Chief Patrick J. Hurley, of Holyoke, who has completely recovered from injuries received last spring and who was present at the meeting.

HARRY BELKNAP.

Chief Henry A. Fox of the Boston Fire Department, and Mrs. Fox, celebrated their thirty-fifth wedding anniversary on November 16.

To save expenses, Buffalo, N. Y., will close the station which houses Engine No. 4. The city plans to revamp the entire housing system to reduce upkeep charges.

Weakening the Department

Will Ultimately Show Increased Fire Losses in the Community

By JAY W. STEVENS,
California State Fire Marshal

Jay W. Stevens

NO SUBJECT could be more interesting or important to this convention at this particular time, than the one assigned me by the Chairman of the Program Committee, namely "Maintaining Fire Department Efficiency." I hope that I may be able to convey the importance of the subject.

It is natural that our city officials give serious thought to the question of municipal economy during times such as these as the public demands that costs be cut, and it is just a question of how and where they shall cut.

The departments of the city service where the greater expenditures are made are naturally the first to attract attention. The fire department, being the one directly affecting the safety of every resident and every piece of property of the city, and as a consequence costly, is naturally one of the first under scrutiny.

City Must Pay for Protection

It is sometimes rather difficult to convince officials of the danger of false economy in relation to the fire department, but a casual study should convince anyone. A city must pay for its protection, and it is just a question of *how* it pays—whether it is for an efficient, well-equipped, well-manned, and well-trained fire department, with the resultant low fire loss, low insurance cost, and a high degree of safety, or for an undermanned, under-equipped, poorly-paid and poorly-trained fire department, promoting a high loss ratio, a high insurance cost, and a lesser degree of safety.

The argument frequently advanced that cities which have shown low per capita fire losses over a period of several years can safely reduce the strength of their departments is unsound. In fact many times the better a Chief's fire record the more he is on the defensive for maintaining an expensive department while having few fires of consequence. The Chinese, I think, are not so crazy as some might believe. They pay the Doctor to keep them well—we wait and then call him. These low per capita losses were in the first place, attained through bringing the strength of the department up to the point where it could cope with the hazards encountered. This same process of balancing the fire defenses against the hazards has been going on for years throughout the country. A fairly satisfactory balance has been reached, with, of course, the occasional exception.

Weak Department Has Greater Losses

Reduction of personnel, or otherwise weakening the department, while it may not show any effect immediately, can ultimately result in but one thing—increased fire losses. Just as building up the strength of departments has reduced fire losses over a long period, so must weakening the departments show increased losses over a like period of time.

A study of any of our American cities, covering the fire loss experience over a five or ten-year period, will prove to the satisfaction of any reasonable person, I am sure, that a first class fire department, which is really a corporation in which all of the people are stockholders, is the best possible investment a city can make, and that it pays big dividends, not only in dollars and cents, but in the vastly more important thing—the saving of human lives.

Several of our better fire departments are today self-sustaining. By this I mean that the cost of all improvements made in apparatus and man power has more than been offset by the reduced insurance costs to the taxpayers.

As a matter of fact, there are instances where the annual upkeep of the entire fire department has been met by the savings created from reduced insurance costs.

An efficient fire department is necessary at all times, but it is doubly necessary during periods of uncertainty and changing conditions, when values are reduced, business profits have decreased, and merchants and manufacturers are being forced into bankruptcy.

Fallacy of Economies

Ridiculous as it may seem, I attended a meeting in this city of San Diego several years ago, where a taxpayer recommended to a gathering which was discussing fire department costs that one-half of the stations be closed, one-half the equipment stored, one-half the man power dispensed with, and that the equipment and the man power be alternated between two fire stations day and night giving service for twelve hours in one district where the station had been vacated. In this manner at half the cost, full service could be maintained. I stated this was a most unique plan, and I was sure of its success provided they could arrange for the minor, unimportant detail of having the fires occur in the district where the equipment was located in the daytime, and likewise in the other district at night. It is even more surprising to know in one of our Pacific Coast cities where we maintain that we have some of the finest fire departments in the world, this plan was actually put into effect as between two fire stations. As might be expected, however, this innovation was soon done away with.

Here are some of the economies proposed by city officials, who think more of politics than they do of efficiency:

1. Discharge the street sweepers and park employees, and have the firemen sweep the streets and cut the grass.
2. Dispense with the Fire Chief, and let the Police

Chief act in a dual capacity, sometimes throwing in the position of Building Inspector, Sanitary Inspector, Dog-catcher, etc.

3. Buy cheap equipment, and build cheap, makeshift equipment to take the place of the standard apparatus, and let the apparatus run down for lack of repairs.

4. Use the telephone instead of the modern fire alarm system.

5. Keep in service old hose which has passed the age of usefulness, and with the hope that it will not be called into strenuous service instead of replacing it as they know should be done.

Problem of Cutting Salaries

One of the most demoralizing things in the fire service is the cutting of salaries, doing away with or reducing the benefits of the pension systems, or lengthening the hours of work. The progress of the fire service, especially in the last ten years, has been so marked that cheap men cannot possibly perform the work.

One of the most foolhardy proposals made is that of doing away with fire hydrants, in some cases pulling the hydrants out of the ground. I have a case in mind where such a proposal has been made, and the cost of the removal of the hydrants would pay the rental of the hydrants for a period of two years.

Fire prevention is one of the first activities attacked by the uninitiated official, and certainly every fire chief knows that fire prevention has fully proven itself, in recent years.

Instead of reducing man power and closing fire stations, the man power should be increased and new equipment added, in order that fire fighting forces may be able to hold the line under these abnormal and unfavorable conditions.

Full consideration should be given to the future inevitable problem of rebuilding a fire department, once its efficiency is impaired.

How easy it is to tear a structure down but how hard to rebuild it! It is certainly more satisfactory from every standpoint to erect an entirely new building, than to rebuild a partially destroyed structure, and this may apply, also, to a fire department. Once its efficiency, its morale is destroyed, it is a long and tedious undertaking to rehabilitate it.

"Open Season" for Slashes

Reading between the lines of this brief summary of conditions and the perils which threaten our fire defense, we find the problem of moral hazard.

It must be considered that improvements to the individual risk are extremely difficult to obtain in times like these, for, while the assured is normally honest and will safeguard his premises, his business may have reached a point where its destruction by fire would be welcome.

It is during times such as these that the enemies of the fire service declare "open season" and come forward individually and in groups supposedly representing organizations, such as tapayers' leagues, economy committees, etc. We might be patient and considerate of their suggestions if we could feel they were sincere in their efforts, as they occasionally may be; but too often their objections are founded on jealousy, prejudice, personal ambitions, or personal gain.

Then, too, there is the problem of ignorance on the part of public officials which is encountered at every turn. Ignorance in fire protection matters leads many authorities to pursue a course dangerous, and, in many cases, damaging to the fire defense of a city.

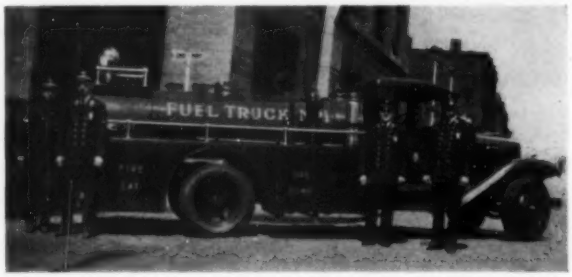
Fire Chiefs and city officials who stand for "Safety First" need and are justly entitled to the wholehearted cooperation and support of the better citizens of the community, the engineers of the National and local boards of Underwriters, and rating organizations at a time like this, and I most earnestly call attention to the seriousness and urgency of the situation that is now confronting us.

Paper presented at convention of International Association of Fire Chiefs, San Diego, Cal.

New Fuel Wagon Placed in Service

A new fuel truck, similar to the kind used at naval aviation fields, is now in service of the Boston, Mass., Fire Department. It is a two and a half ton truck mounted on a Sterling chassis and equipped with a 500-gallon oval tank for gasoline and a 75-gallon tank for lubricating oil. The truck is 21 feet long, eight feet high, and seven feet wide.

The equipment includes a power driven gasoline pump used for supplying gasoline to apparatus at fires through 25 feet of hose carried on a reel in the rear of the truck and



Fuel Truck No. 1 of Boston Fire Department

controlled with a self-closing nozzle. This gasoline pump can also be used as a gasoline suction pump for filling the fuel wagon or for use in pumping out supply tanks located in fire houses. The truck is fitted with an air compressor and air supply tank for inflating tires of apparatus, a meter for metering fuel, an American-LaFrance 10-inch searchlight, two 2½-gallon F. D. type foam hand extinguishers, two 15-pound Lux extinguishers, and two one gallon Pyrene extinguishers.

The apparatus was made by the Sterling Motor Truck Company of Milwaukee, Wis. It has a 6-cylinder Continental motor fitted with Zenith carburetor and Delco-Remy ignition. The wheel base is 13 feet, 5 inches, and the wagon is fitted with Firestone pneumatic tires, dual on the rear wheels. A new type of steam hose is carried for use with the Ross thawing device for thawing frozen hydrants. The fuel wagon responds to all third alarms and is known as Fuel Truck No. 1. Its design was planned by E. E. Williamson, Superintendent of Maintenance.

HARRY BELKNAP.

Deputy Chief Langford Retires

Thomas R. Langford, Deputy Chief of the New York Fire Department since 1903, retired November 10 on his own application. On November 20 he would have completed forty-six years service. He was born in New York sixty-eight years ago and in his youth was in the shipping business.

Within the span of twenty-one years as Deputy Chief he took two examinations for head of the department. His name appears on the roll of merit seven times. Chief Langford was a long, close, personal friend of the late Charles F. Murphy, leader of Tammany.

One fireman was killed, one seriously injured and two others hurt when fire apparatus of the Monroe, Mich., Fire Department on which they were riding to a fire, was struck by a railroad locomotive. The driver did not see the freight train until it was too late to avoid the collision.

A Study of Building Regulations and a Few Court Cases of

Criminal Law Violations

By LEO T. PARKER, Attorney-at-Law

ORIGINALLY, the "police power" was exercised by Fire Department and other municipal officials in the interest of public health, safety, peace, and morals. Later it expanded by including questions of "general welfare" and regulations designed to promote not only public health, morals, and safety, but regulations to promote "public convenience" and "general prosperity."

Scope of Police Power

It is well known that private property cannot, under the guise of police power, be subjected to arbitrary restriction, if the welfare of the general public can in no way receive benefit by such restriction. On the other hand, the Courts have consistently held that laws regulating usage of private property are within the police power and, when they are fairly within well-recognized bounds, they are valid, even though they may entail considerable hardship upon the owners of private property.

Yet, as above stated, while such police power is broad, there are limitations to its exercise. For example, restrictions of usage of private property to be valid must bear some substantial relationship to the public health, safety, morals or general welfare, and police regulations are void which encroach on the protection accorded the citizen by the Federal Constitution. Therefore, it is interesting and informative to briefly review a few of the most recent United States Supreme Court decisions interpreting the limitation of police power.

In Reinman vs. City of Little Rock, 237 U. S. 171, the Supreme Court of the United States held that it was within the police power of a state to regulate or prohibit a livery stable, garages, and the like, as a nuisance and, if such power was not exercised arbitrarily or with unjust discrimination, it did not infringe upon rights guaranteed by the Fourteenth Amendment.

In Hadacheck vs. Sebastian, 239 U. S. 394, the Court held that an ordinance prohibiting the manufacture of bricks within specified limits of the city was *not* unconstitutional as depriving the owner of a brick factory of his property without due process of law.

In Thomas Cusack Company vs. Chicago, 242 U. S. 526, it was held to be within the police power of a city to prohibit erection of billboards in residential districts in the interest of the safety, morality, health, and decency of the community.

On the other hand, in Buchanan vs. Warley, 245 U. S. 60, a city ordinance which prohibited colored persons from owning or occupying houses in localities where the greater number of houses were occupied by white persons was held *unconstitutional* as a deprivation of private property without due process of law.

Also, in Nectow vs. Cambridge, 277 U. S. 183, the Court held a city ordinance void which listed certain privately owned building lots in a section in which was permitted only dwellings, hotels, clubs, churches, schools, etc. The Court said:

"The governmental power to interfere by zoning regulations with the general rights of the landowner by restricting the character of his use, is not unlimited, and, other questions aside, such restriction cannot be imposed if it does not bear a substantial relation to the public health, safety, morals, or general welfare."

Subjects Treated in This Article

Scope of Police Power

Restrictions of Public Buildings

Ordinance Regulating Storage of Oils is Valid

Cases of Validity of Criminal Regulations

Operating Business Without a License

Restrictions of Public Buildings

Considerable discussion has arisen from time to time whether a state law, police regulation, or city ordinance is valid which restricts construction of public buildings in prescribed localities.

A very important case on this subject is Village of University Heights, 20 F. (2d) 743. In this case the United States Court held a zoning ordinance void which prohibited an orphans' home to be constructed in a prescribed residential district.

The Court explained that the police power of the city was not broad enough to exclude this orphanage home from the residential district. In discussing the police power of the municipality to exclude such orphans' home the Court said:

"That power has been held, as we have seen, to include the right generally to exclude business houses, stores, shops, and apartment houses from strictly residential districts. It has never been held to include the right to prohibit the use for orphan children of cottages built according to the requirements of the municipality. We can see many valid reasons, affecting the public welfare, which would justify the exclusion of factories, business houses, shops, and even apartment houses from strictly residential districts, but which would not apply to the use of structurally proper cottages for an orphanage; and while an orphanage would no doubt be less agreeable to the community in some respects than a private school or private residences, we are unwilling to hold that it is within the power of the village to prohibit the use of cottages of this character for that purpose."

Another higher Court case decided during the past few weeks and involving this law is Andrew vs. Kansas City, Mo,. 58 F. (2d) 593. In this case it was shown

that a city ordinance was enacted which platted the city into what may be called first and second residence, retail business or commercial, light and heavy industrial, and unrestricted districts.

A charitable corporation proposed to construct a home for elderly white ladies. It was intended to be required that ladies to be admitted must have reached the age of 65 years, be sound in mind and body, and pay an original entrance fee of $800.

Suit was filed to prevent erection of the building in a location intended by the city ordinance to be utilized exclusively for residences. In holding this ordinance void, the Court said:

"It would seem that the objections are not so much that the intended use of this home really interferes with a zoning plan supposed to benefit the entire city, but rather because of the feeling which the people of a particular section have against an eleemosynary institution of this nature being located in such area. . . . To justify such restriction the police power would have to be extended, not only to restricting certain districts to residence purposes, but to restricting such districts to particular classes of residents, and this has been quite universally condemned by the decisions. . . . Our conclusion is that the restriction upon the use of plaintiff's property is not an essential of the general zoning plan, and is in its application to the plaintiff's property so arbitrary and unreasonable as to be void."

Ordinance Regulating Storage of Oils Valid

It is clearly within the police power of a city to provide by ordinance for the regulation and prevention of the storage of coal oil, naphtha, benzine, petroleum, or any of the products thereof and other combustible or explosive material. So held a higher Court in the late case of Jennings vs. Calumet Nat. Bank, 180 N. E. 811.

In this case it was shown that a city enacted an ordinance, as follows:

"It shall be unlawful to install any tank or tanks for the storage of any of the liquids mentioned in section 2277 in any lot or plot of ground without first obtaining the written consents of the property owners representing the majority of the total frontage in feet of any lot or plot of ground lying wholly or in part within lines 150 feet distant from and parallel to the boundaries of the lot or plot of ground upon which said tank or tanks is or are to be installed."

In holding the ordinance valid, the Court said:

A Big Man in More Than One Sense of the Term

This is Chief Rod Gambrell of Dallas, Tex., Fire Department and a conspicuous figure at the I. A. F. C. convention in San Diego, Cal. He is somewhere dangerously near the seven-foot mark in height and can easily be spotted in any crowd. This photograph was taken while he was attending the convention.

"Regardless of the question as to whether breach of the ordinance in itself can be said to inflict special damage upon defendant in error, we are of the opinion that the finding that such damage would result is well warranted by the evidence."

Validity of Criminal Regulations

Obviously, a reasonable law is valid which provides for criminal prosecution of any person convicted of performing any act intended to effect destruction of private or public property.

Another well settled point of the law is that, although a criminal law does not particularly and especially specify that a person may be guilty of implication or assistance in a crime, yet the Courts will imply that a person who hires or assists another to violate the law is guilty of committing the crime.

For illustration, in State vs. Bendickson, 242 N. W. 693, it was disclosed that a state law provides, as follows:

"Any person who wilfully and maliciously sets fire to, or burns or causes to be burned or who aids, counsels or procures the burning of any barn, stable, garage or other building, whether the property of himself or of another, not a parcel of a dwelling house, or any shop, storehouse, warehouse, factory, mill or other building, whether the property of himself or of another; or any church, meeting house, court house, work house, school, jail or other public building or any public bridge, shall, upon conviction thereof, be sentenced to the penitentiary for not less than one nor more than ten years."

A person paid another to set fire to a garage. The person who actually set fire to the building was convicted of violating the above mentioned statute. The counsel for the person who paid to have the building burned contended that the latter was not guilty since he had not in strict sense violated the above-mentioned law. However, the Court held both parties guilty, and said:

"Considering the language of the verdict in the case at bar in connection with the wording of the indictment and the charge of the Court, we feel that there is no difficulty in determining that the offense of which the defendant was convicted is the one defined."

In another important case, State vs. Glover, 50 S. W. (2d) 1049, it was disclosed that a man named Glover was convicted for the death of a municipal fireman.

The facts of this case are that Glover placed a large quantity of gasoline in his building and set fire to it for the purpose of collecting the fire insurance.

The fire was discovered by a young man who turned in a fire alarm at 2:03 a. m., and firemen responded within a few minutes. The fire was soon extinguished and firemen were on the inside when another explosion occurred. It was so violent that the south wall of the building was blown out. One of the firemen was killed as a result of the explosion. A warrant was sworn out against Glover charging him with murder of the fireman.

To begin with, the evidence establishes without controversy that the death of the fireman was the direct consequence of the intended arson. Because of the explosion, he was pinned down in the ruins and burned to death. Therefore, the higher Court held Glover guilty, and said:

"It was immaterial that the appellant (Glover) did not in fact intend or expect any one to be in the building at the time of the fire, if he reasonably should have anticipated fatal results from his act. . . . In the present case the arson was committed to defraud insurers of the drug stock and fixtures. . . . That involved the destruction of the property, and it can hardly be asserted the appellant (Glover) could absolve himself from the consequences of his act merely by withdrawing from the scene after he had put fatally destructive forces in motion to accomplish his purpose."

Undoubtedly, the Legislature may with propriety re-

quire cleaning and dyeing shops and spotting and sponging establishments to furnish a reasonable bond for the protection of that portion of the public having dealings with them in that line of endeavor. Such provision might well be held to be reasonably connected with the purpose of the law, to protect the public from potential loss by reason of the fire hazard involved in such business.

For instance, in the late case of Weisberg, 12 P. (2d) 446, it was disclosed that the owner and operator of a dyeing and pressing establishment was arrested and placed in jail because he operated his business without a license from the State Fire Marshal, contrary to and in violation of "An act to regulate the location, construction, occupancy and operation of cleaning and dyeing shops or stores and spotting, sponging, and/or pressing establishments . . . providing for the registration and licensing of persons engaged in such business; providing for the enforcement thereof by the State Fire Marshal as chief of the Bureau of Fire Safety in the Department of Industrial Relations.

The owner of the establishment appealed to the Court on the contention that the law does not constitute a proper exercise of the police power and, also, because the act is arbitrary and unreasonable as well as discriminatory in failing to include all merchandising stores, hotels, hospitals, and sanitariums not engaged in cleaning, sponging, dyeing, etc., commercially and for compensatory gain.

In holding the law valid and enforceable, the Court said:

"Citation of authority is unnecessary to establish that the police power extends to everything expedient for the preservation of the public safety, health, comfort, or good morals. It is within the legislative discretion in the exercise of such power to place such restrictions upon the use of any property or the conduct of any business as may be reasonably necessary for the public safety, comfort, or health. . . . It is not the rule that all laws shall be universal or general in their application. It is sufficient that laws of a general nature have 'a uniform operation.' A law is general and uniform and affords equal protection in its operation when it applies equally to all persons embraced within the class to which it is addressed, provided that such class is founded upon some natural or intrinsic or constitutional distinction between the persons composing it and others not embraced in it."

RUNS OF NEW YORK APPARATUS CURTAILED BY CHIEF McELLIGOTT

Customary Routine Practices Are Changed to Save Expenses and to Reduce Charges for Accidents to Fire Apparatus

By William Jerome Daly

A DEPARTMENT order issued by Chief John J. McElligott, of New York, reduces the number of pumping engines assigned to respond on first alarms of fire in the day time.

Under the Chief's order, wherever three or more pumping engines previously had responded on the first alarm, the pumping engine scheduled to arrive last, will from now on remain in quarters and become due to respond first on the second alarm or to another fire. Ladder trucks are not included in the order.

Chief McElligott has also eliminated the duplication of responses by Battalion Chiefs. Last year fifty battalion commanders responded to 56,153 alarms—most of them in pairs. Under the new order of responses, the Chief due first at the fire will respond alone in the day time and the Chief second due will hold himself in reserve for a second alarm, or for another fire in the district. At night time, both the first and the second due Battalion Chiefs will respond on first alarms as heretofore. Last year the record of responses by Battalion Chiefs was held by the 12th Battalion in Harlem—2,629 runs, most of them in combination with chiefs of adjacent districts.

In 1931 there were 1,720 special calls for chief officers to respond outside of their districts because the Chiefs in adjoining territories were attending other alarms or operating at other fires. These extra calls will now be substantially reduced by the attendance of one Battalion Chief instead of two on first alarms in the day time.

On all alarms in the night time, and on second or greater alarms in the day time, the responses will be the same as they have been in past years.

Traffic congestion and accidents to apparatus are not the only reasons advanced for reducing the number of fire engines responding in the day time. Since Chief McElligott succeeded Chief John Kenlon last March, he has given much time and study to the task of reducing the number of fire engines on the streets, without impairing the efficiency of the department or reducing the fire protection to life and property.

Records of the Fire Department show that 44,000 alarms of fire in this city last year brought out 385 engine and ladder companies on 260,956 runs. In only five per cent of these responses was it necessary for firemen to make use of more than one hose stream to extinguish fire. Ninety-two per cent of 31,000 fires were confined to the point of origin.

Use of Fire Boats Curtailed

Last Spring when Chief McElligott initiated his survey of operating conditions in the fire-fighting force he ordered the curtailment of fire boats second-due on waterfront alarms because of the prevalence of false alarms and the unnecessary wear and tear on the boats as well as waste of fuel. Last year, thirty per cent of the total fire alarms in this city were maliciously false. Firemen have been killed, many of them maimed in accidents, and thousands of dollars spent annually on apparatus repairs due to false alarms.

In the event of second or greater alarms in high pressure zones, pumping engines will now respond and connect to low pressure hydrants. When the fire is extinguished, the high pressure service will be shut down and the washing out or the overhauling of premises and debris will be finished with the aid of low pressure pumping engines. This will result in a tremendous saving of water and electrical energy at the high pressure pumping stations.

Last year the high pressure fire service in this city (excepting the Coney Island plant) pumped a total of 342,000,000 gallons of water. Many fires that are extinguished in a half hour or less often require several hours of overhauling of premises and debris with hose lines to preclude the possibility of a rekindle. Heretofore this was done in high pressure districts with high pressure service. Under Chief McElligott's program, the mopping up of fire ruins will now be done with streams from low pressure pumping engines, leaving the high pressure service free from needless strain and unnecessary consumption of metered power.

Chief Louis Almgren of San Diego, Cal., recommended to the City Manager that three new fire stations costing $77,050 be erected and that some fire equipment be purchased. He said that the high rating of the department was menaced by the depreciated state of fire equipment.

Junior Firemen Guests of Wilkes-Barre Fire Department

Chief Thomas S. Flannery and members of the Wilkes-Barre, Pa., Fire Department were hosts to the Junior Firemen at a local theatre. A number of fire prevention films supplied by the National Board of Fire Underwriters, were projected for the youngsters. Fire helmets were supplied through the courtesy of the Texas Oil Company. Children between the ages of eight and ten years were privileged to enter an essay contest using for material the basis of the motion pictures displayed.

With a Military Type of Organization, Efficiency Features

The Havana Fire Department

While there was published in the issue preceding the 1931 convention of the I. A. F. C. an article on Havana and its Fire Department, the description which follows is so much more complete that it will prove of interest to those who attended the convention and also to those unable to be there.

By DONALD HOLBROOK,
Boston, Mass.

HAVANA, besides being a beautiful city, where the limber elbow may exercise freely, is noteworthy for its peculiar combination of the new and old. The visitor who rides down the broad Malacon sees a vista of the modern city with several towered buildings to the left, replicas of Northern skyscrapers, while ahead looms the picturesque Nacional Hotel, stretching its sixteen stories to a vantage point at the harbor mouth.

Before reaching the Malacon the visitor has traversed the old city, with its varied and tropic-styled commercial buildings and financial offices. Here, streets so narrow that two baby carriages must be careful in passing, allow pedestrians an intimate view of the varying activities behind latticed doorways and opened windows.

This was my first visit to Havana, and after duly appreciating the picturesque setting, the benefits of a free country and the lassitude of climate, my mind reacted to the interest which has proved a pleasurable hobby, and which qualifies me as one of those strange mentalities which is interested in the profession of fire fighting.

For many years now I have enjoyed collecting information on the various methods of fire fighting which are used, not only in our own cities, but in those of foreign countries. It seemed to me that with the combination of old and new in Havana, there must have developed a unique fire-fighting system, and I was intrigued to inspect it.

My driver spoke excellent English, and seemed familiar with the ways and means of meeting the Havana Fire Department officials. He drove me to Headquarters, situated in a large building, combining the atmosphere of old Spain with the application of more modern efficiency. Here, I was to meet the head of the department.

I had previously told my driver that I was a friend of the Boston Fire Department, and that I was interested in seing the mthods employed by the city of Havana in extinguishing fires. My driver was an efficient lad looking for a good tip, and may have emphasized my statement. Perhaps he told the people at Headquarters that I was Chief of the Boston Fire Department; anyway the results were practically the same as if this had been a fact.

Chief Ranks as a Colonel

After a brief wait, we were presented to a striking-looking individual wearing a most imposing uniform, who welcomed us with a smile and many bows. This official was a Colonel of the Department, in rank corresponding to our Department Chief. The Colonel spoke only Spanish, but through my driver, acting as interpreter, he informed me that the Havana Fire Department was at my disposal—apparently the sky was the limit. Again, I received that definite assurance of courtesy which I have met in many countries when talking with fire officials.

Due to the barrier of my inability to speak Spanish and the Colonel's limit of three English words, I was graciously turned over to Captain Carlos Villa Ruel, Senior Aide, whose English was excellent. Thus the afternoon commenced.

How Fire Alarm Is Given

In the preliminary conversation with Captain Ruel, I discovered several general facts which have a distinct bearing on the nature of the Havana Fire Department and its personnel:

First—when a fire has occurred, the owner of the property goes to jail until his innocence has been proved.

Second—There is no fire alarm signal system as we know it. When a fire occurs, the citizen advises the nearest policeman. (They are found like lamp posts—on every block.) The policeman telephones Police Headquarters over the police signal system, giving location, and this, in turn, is telephoned to the fire station nearest the scene of action. The policeman verifies the fact that the fire is actual before communicating with Headquarters. The result has been that false alarms are practically unknown in Havana.

A Strictly Military Organization

The Havana Fire Department is a strictly military organization. The accompanying personnel list gives the rank and number of officers and men. There are 257 fully-paid men and officers, operating on a two-platoon system, which means that about 120 men are on duty at one time. There are six modern station houses, but only two in Havana proper. Eleven machines are available for actual fire extinguishment.

The apparatus is modern, and I saw several American-LaFrance pumpers, and Ahrens-Fox machines at the central station. The equipment seems to be that of the usual municipal Fire Department, except, of course, in relation to amount, and limited facilities which have been found adequate.

If you will remember that Havana is a city of approximately 540,000 population, and that last year 125 runs were made by the entire Department, with only five fires which might correspond to multiple alarms in the North, you will form a picture of the city's minimum requirements.

Captain Ruel took us to the central station house, called Cuartel Magoon. We arrived there as a new platoon came on duty. Before being discharged, the outgoing platoon, as well as the incoming one, lined up in military formation—each man equipped with helmet, small all-metal hatchet, and carrying a life line carefully coiled at the belt. The men were called to attention, and new orders were read. At a given command, they drew from their scabbards the small hand hatchets and presented them for inspection, much the same as rifle inspection under our army discipline. Roll call was taken, the men answering to their names in the peculiar manner which is known to all service organizations.

The inspection of the platoons gave me an opportunity to view the character of personnel and individual equipment. They are an up-standing lot, these black shirts in Havana. Their military discipline has made them alert, and kept them in a fine physical condition. Light blue linen uniforms of military cut gave them a natty appearance, and metal helmets of distinctive design reminded me of the Italian Carabinieri, where style and appearance have been considered, as well as protection and efficiency. High laced leather boots are worn by officers and men when on duty, and replace the conventional rubber boots of northern Departments.

Excellent Quarters in Attractive Fire House

Following the ceremony of inspection of platoons, Captain Ruel showed me over the station house. It was an attractive building, following the tropic style, with the usual appurtenances which may be found in a Northern fire house. Bunk rooms, beds, lockers and poles all show a distinct resemblance to Northern practice.

The arrangement of apparatus on the main floor was well carried out, and comfortable quarters had been provided for men and officers similar to our recreation and reading rooms. In addition, outside of the station there were two handball courts, and a dozen or more men were engaged in this strenuous pastime.

Captain Ruel ordered a drill put on for me in a yard which was on the opposite side from the handball courts. The ladder crew gave an exhibition of effecting a rescue from a burning building (tropical type) without the use of ladders. It must be remembered that in most tropical countries each window has a balcony, or semi-balcony, and that there are many crevices and protruding ledges attached to the building.

"Rescue" Without Ladders

At a word of command, the men scrambled like the proverbial monkey up the walls of the adjoining building, the technical problem being the rescue of an imaginary damsel in distress on the fourth floor. These men apparently climbed right up a vertical wall, much as the human fly, which, on occasion, has startled New York and Boston by his antics. They would make use of a corner ornament, or anything which would give them "three fingers." It was a matter of seconds before they had all reached the ledge on the fourth floor and had arranged themselves in a position to carry the imaginary damsel from the window to the ground.

I could not help but speculate as to what would happen in the North when at some multiple-alarm fire our firemen should engage in similar gymnastics. The usual crowd would be quickly augmented when privileged to witness such an exhibition. Tickets undoubtedly could be sold to the curious and applauding multitude, and receipts turned over to swell the coffers of the local Firemen's Relief Fund.

Personnel and Equipment of the Havana Fire Department

1 Colonel—Chief
1 Commandant—Assistant Chief
1 Lieutenant Colonel—Engineer
1 Captain—Assistant Engineer
1 Captain—Chief of Office
1 Captain—Chief of Prevention
2 Lieutenants—Inspectors of Prevention
1 Lieutenant—Auxiliary Officer
2 Telephone men—Central Office
6 Telephone Men—Branches
2 Firemen—Orderlies to the Chief
26 Firemen Chauffeurs
1 Commandant—Chief Doctor
4 Captains—Doctors
4 Captains—Line (Station Chief)
12 Lieutenants—Assistant Chief Sub Station
160 Firemen

Repair Shop

1 Chief Mechanic
4 Master Mechanics
6 Mechanics
12 Apprentices

Equipment

6 Ahrens Fox Pumpers
3 Extinguishers — American - LaFrance chemical apparatus, 2 of 80 gallons
2 Extinguishers—Seagrave 60 gallons capacity
1 Stair Cor. 12-18-24-42 feet
1 Stair Cor. 90 feet. 24-50 feet
3 Ambulances—Studebaker 1931
2 Buick Roadsters—Chiefs
3 Motorcycle side cars—Indian
1 Stutz truck for repair shop
1 Bethlehem to transfer personnel

Fire Alarm Methods

Captain Ruel explained that their alarm system, in his estimation, took little longer to operate than that used in the North. In each station house there is a man on watch at the telephone. Police Headquarters telephones an alarm of fire, giving location, the watchman rings an alarm bell, and away they go.

Captain Ruel was justifiably proud of his department. He had been in the North and knew of the pride we take in the speed in which alarms are transmitted and answered by the department. He may have felt that I was skeptical as to the alertness of the personnel where department runs totaled only 125. He, therefore, set out to prove his case.

Picture the men playing handball, a half dozen boys on the main floor, up-stairs a few men reading or playing games, Captain Ruel and myself in an obscure corner. The worthy Captain catches the eye of the man on watch and waves his hand. The watchman rings the alarm. I confess had I not watched the process, I should have thought that the telephone was ringing for one of the firemen. The alarm really sounded like a door bell. However, it worked. I looked at my watch—under ten seconds and the men had jumped on the machines, started the motors and were well out of the doors. There is nothing slow about the Havana Fire Department.

The fundamentals of fire fighting are much the same the world over, but the requirements which must be met in varying localities are surprisingly different. Wherever the visitor may go, he finds the universal characteristic of all fire-fighting forces—courtesy, and interest in those who are interested in them.

The Fire Service Instructor

The sixth installment of a treatise to aid those responsible for training men in the fire service to develop a systematic type of teaching.

By O. D. ADAMS,
State Director for Vocational Education in Oregon, and Prof., Industrial Education, Oregon State College

and

EDWARD L. BOATRIGHT,
Battalion Chief, Portland, Ore., Fire Department, and Director, Portland Fire College

Chapter V.

Examination

Differences in Individuals

As you will discover in your advancement and progress as an instructor, the ability to ask questions of the right kind (thought-provoking questions) is almost an art. Not every member of your class or your group thinks alike; neither will they answer alike. They have various capacities and varying degrees of intelligence. Some have ability along the lines of practical achievement, others are possessed with certain characteristics that make learning difficult. Others make progress without apparent effort. Some spend a great deal of time and work hard, and still seem barely able to pass the examination. Levels of experience, education and training, as well as personal characteristics are factors in deciding differences in individuals.

These limitations of the learner as well as your own shortcomings as an instructor make the job of asking questions a most difficult one—but do not stay away from it for that reason. Do the best you can, and learn to improve and do better through actual practice.

Kind of Examination to Give

Examinations of the kind recommended here are just as often a test of the ability of the instructor as of the learner. Most of us detest taking examinations—we do not like them, and yet they do have some desirable features. By a well worked out examination, you can determine to some extent how much of the information the learner has obtained and his progress in the subject. From his replies to questions you can determine where he needs assistance, and from the results as a whole you will have more of an insight into your own weaknesses.

The kind of examination to give, therefore, if applied to a "doing job" is to give the learner the actual job to do—this is always the best. In other words, you can find out if he knows how to refill and reassemble a fire extinguisher by giving him the job to do.

However, on the subject of ventilation, you might have to wait for some time for an actual incident. A case set in keeping with actual conditions would be the next best.

Lessons of an informational nature may be tested out through asking examination questions.

Factors of a Good Examination

A good examination should consist of those characteristics which make them reliable, easy to score (mark) and which get somewhere (objective). The following may help you in developing your examinations:

1. Ask yourself the question, What is this examination being given for? Is it to measure ability actually to work arithmetic? Is it to show whether they can answer the questions as I do—as the book does? Or is it to find out how well they can use their reasoning power? In other words, Why am I giving an examination? Am I trying to find out the learner's doing ability—or knowledge—or appreciation?

2. Make the questions clear—short if possible, using the language of the trade and designed not to cover too much territory in one question. Keep the word "not" out of your examinations of the true and false type.

A great deal more could be said about examinations, but the purpose of this book is to give a beginner working ability in trade instruction. Therefore, the following parts of examinations are included, for your help and assistance.

Grade..... Name.....

Fire College

District No. ..... Div.....Co.....No.....

Firemen's Course

Date .....

Instructions

Read the following very slowly and check carefully.

You will find it a review examination in simple arithmetic, strictly pertaining to fire prevention. Follow directions very carefully as your score depends on it. Each statement must be worked out completely. The reverse side of the paper may be used to show completed problems if necessary.

1. In the year 1871 a cow kicked over a lantern in Mrs. O'Leary's barn and started the great Chicago fire. How many years ago was the great Chicago fire?
2. There were 10,217 deaths due to fire in the U. S. A.; 1,345 were caused by fires ignited by open flames; 2,452 were caused from the misuse of inflammable liquids. How many deaths were caused by other reasons?
3. Each day of the year, on an average, 5 schools, 5 churches, 15 hotels, 1 hospital, 4 warehouses, 114 farms, 6 department stores, 2 theatres, 8 public garages, 3 printing plants, and 3 dry good stores are burning. How many fires occur each day? How many fires occur at this rate in 365 days, or one year?
4. On an average, Blanktown has 7 fire alarms per day. How many fire alarms occur in Blanktown in 30 days, at this rate?
5. In the U. S. A., there is a home on fire every 4 minutes. How many homes burn in two hours?

Fire College

Grade .....Name .....
Div. .....Co. .....No. .....

Firemen's Course

Date .....

Instructions

Read the following very slowly, check carefully.

You will find a review examination in simple arithmetic, strictly pertaining to the fire service. Follow directions as above. Each statement and subdivision thereof must be worked out completely. The reverse side of the paper may be used to show completed problems if necessary.

1. White Roman numerals from one to ten.

Ans. .....

2. Write the Arabic numerals from one to ten.

Ans. .....

3. Write in figures:
   (a) Forty-eight thousand, thirty-five.
   (b) Eight million, two hundred three thousand, forty.
   (c) Fifty thousand, nine.

Ans. (a)..... (b)..... (c).....

4. Write the sign of addition ( ), subtraction ( ), multiplication ( ), division ( ).

(To be continued)

Dacey of Utica, N. Y., Retires

William F. Dacey, seventy-nine years old, Deputy Chief of the Utica, N. Y., Fire Department, retired on October 5 after fifty-eight years of service. His associates presented him with a gold watch, chain and knife. On the watch was inscribed, "Presented to William F. Dacey by the Utica Fire Department, in honor of his fifty-eight years of service, 1874-1932." The officers' association voted him honorary life membership and presented him with a suitable badge.

THE ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

RELATION OF DEPRESSION TO ARSON FIRES

STUDENTS of insurance have for many years attempted to establish a direct relation between the number of fires set by the insured to the number of business failures. In other words they have attempted to show that as business failures increase, the number of arson fires will increase in the same proportion. In this they have not been successful for it was impossible to establish an empirical formula that would cover all cases.

However, it is generally accepted as an axiom that such a condition of facts is true. The present business depression has tempted many an otherwise honest person to "sell out" to the insurance companies to avoid future losses in his business or to secure cash for business debts.

Chiefs in some cities have waged an aggressive campaign to discourage arson cases. Those caught are so treated as to instill fear in the minds of others.

In the box on this page is the problem in full that is discussed in this issue. In the box on the following page is the question that will be treated in the next issue. Should you have some comments that you would like to add to the next discussion, you are invited to write to the "Round Table Editor," FIRE ENGINEERING, 24 W. 40th Street, New York, N. Y.

The letters received follow:

Discussion of the Question

Thomas P. Brophy, Chief Fire Marshal, New York, N. Y.: —In the City of New York, I find that because of low inventories and reduced stocks of merchandise, there has been a reduction in commercial and industrial fires, rather than an increase due to business depression. On the other hand, there has been an increase in dwelling and apartment house fires, as well as in summer bungalows and seashore hotels.

One of the principal points of origin of fires in dwellings are clothing closets. Investigation has disclosed that the persons having these fires have been seriously affected by the depression—some have been out of employment for months, while others, because of various losses they have encountered, have been unable to meet payments of taxes, interest on mortgages.

The increase in store and shop fires can be attributed to loss of business due to lost buying power as well as to competition of the chain stores with their mass production and consequent underselling of the small, independent dealer.

In the majority of dwelling house fires no physical evidence of incendiarism has been discovered, although the character of the blaze strongly indicated that the origin of the fire was suspicious. Moreover, investigation of the possible motives which might have actuated the burning strongly pointed to the assured, despite iron-clad alibis.

In New York City every fire, regardless of the amount of loss, is investigated and a record filed. The name of the occupants or owner of the building is filed in a special index. Persons having a suspicious or incendiary fire are indexed on pink cards. Sworn testimony of all witnesses connected with suspicious fires is also taken, and in business fires the account books, financial statements and inventories of the loss and fire insurance policies are subpoenaed.

The routine which persons having suspicious fires have to pass through in the course of the investigation of the fire, with the consequent delay in the adjustment of their loss by insurance companies, has a discouraging effect and is acting as a strong deterrent to would-be profiteers of crooked fires.

While fire prevention is of paramount importance, it deals only with the physical hazard. Efficient fire investigation, on the other hand, delves into the moral hazard and fixes the responsibility for the blaze. An unscrupulous merchant might apply a torch immediately following the visit of a fire prevention inspector, who discovered no physical hazards, but the moral hazard would exist, with the resulting blaze, in an effort to stave off financial disaster.

Charles E. Fortin, Chief, Lewiston, Me.: The business depression has not brought any increase whatsoever in the number of arson fires in this city.

The only steps we have taken to prevent an increase of so-called arson fires, is the serious continued efforts to discourage such attempts by thorough inspections and investigation of all fires and the fearless publishing of facts if warranted.

S. E. Hanna, Chief, Coffeyville, Kan.: The business depression in my town so far has had no effect on the increase of fires in the way of arson. We have had only one arson fire here in some time.

We believe that regular inspections of the business district has a lot to do to discourage the arsonist. We have also organized a "Junior Fighters Organization" composed of boys between the ages of six and sixteen years, whose duty is to practice fire prevention the year round. I believe their help in cleaning up around their own homes and reminding the older folks of the dangers of fire, goes a long ways toward lowering the fire loss in our city. Each member is issued a card.

W. H. Fuller, Chief, Vicksburg, Miss.: We have had a number of suspicious fires in the residential sections of our city. I might attribute it to the depression inasmuch as in a number of cases the owners of said buildings were contemplating making changes to the interior and exterior of the building. Being short of funds they planned to let the insurance company pay for the job.

When we believe we have run into an arson fire we make a complaint to the State Fire Insurance Commissioner, who has several field men who make an investigation of the fire. So far we have failed to get a conviction due to the fact that this state has no arson law. The only law we have is that if a person is caught it means life in

HERE IS THE PROBLEM

Have you found that the business depression has brought an increase in the number of arson fires?

What steps have you taken to prevent an increase in arson fires?

Have you been successful in checking an increase of suspicious fires?

prison. That law is too drastic. What we need in this state is a law whereby any person found guilty of the crime of arson will get five or ten years at hard labor. Then we might get better co-operation from the public—and from the guilty ones.

I have not been successful in checking suspicious fires for the reason stated above.

Geo. Boughner, Chief, Grand Rapids, Mich.: We have felt in some cases that fires have been due slightly to the depression but have been unable to determine or place the responsibility on any one cause.

We have been carrying on our regular routine of keeping close watch on premises which we believe require close watching. We have connections through which we gain information as to financial ratings and business of these establishments. We make inspections often enough to cause these persons to realize they are being watched and are suspected of wrongdoing. I am satisfied with this method as we have not only at this time but in the past as well prevented many burn outs by strictly investigating all fires as to their origin. We have had nine confessions of incendiary fires in the year 1931—two were adults, the rest children.

A performance, in one of our local theatres, is given occasionally for the benefit of the Junior League, dealing in fire prevention. It provides them with entertainment and stimulates in them the value of fire prevention. I am sure they have been instrumental in lowering the suspicious fires in Coffeyville.

A. P. Goss, Chief, Marysville, Cal.: I find that arson fires can most generally be traced to poor business management. No doubt the business depression has had more to do with that class of fires in some localities, but I know that this tendency can be thwarted to a greater degree by direct action on the part of the local Chief.

Early in the first stages of the present depression I realized that certain unscrupulous merchants would use this condition to "sell out," and I began visiting the merchants frequently. Not so much with the appearance of inspection but rather as a little social visit with a word now and then about the cleanliness of the place and the discouragement of placing huge signs completely across the windows and doors. In this way, I feel certain that I have left the impression with them that I was on the job and that even an unintentional fire in their establishments would be rigidly investigated.

To date there has been no suspicious fire in the business district. Such fires as have been in stores and offices—which are very few in the last two years, have been traced to a direct source and found to be purely carelessness or unintentional types.

C. W. Carliss, Chief, Lagrange, Ga.: We have had very few suspicious fires in the past year, and believe that none could be directly traced to the present hard times.

We are keeping a very close watch on the business district and are keeping one man on inspection in these districts nearly all of the time. I have also been spending a great deal of my time in the same way.

We consider this system very satisfactory, taking everything into consideration.

I consider good careful inusrance agents the best kind of protection the insurance companies can have, and I try to cooperate with them in all ways possible.

R. O. Raymond, Chief, Renovo, Pa.: I have found that the business depression has caused an increase of fires which have all indications of being "set."

It has always been customary in the past that all fire apparatus be taken to fires in nearby towns a distance of not over five miles. I believe that the time may come when we would get an out-of-town call and then some "fire bug" would "set one off" in the town and by the time we got word and could again return to town with the apparatus the fire would have made considerable headway. In the future one company will remain at home when the alarm is received for an out-of-town fire. We have been very sucessful in checking suspicious fires because some of them are caused by oil or gas and we have found by using chemicals and closing all doors and windows, the chemical reaction soon smothered the flames.

HERE IS THE PROBLEM FOR THE NEXT ISSUE

What is the duty of the city electrician at fires?

Is there any other tie-up with the duties of the electrician and the work of the Fire Department?

How would you suggest that better cooperation might be obtained?

Felix M. Johnson, Jr., Chief, Gainesville, Tex.: Yes, I believe that business depression has bene responsible for an increase in arson fires.

To prevent further increase of such fires, a local fire board has been appointed by the City Council, which appointment was the result of a bill being passed by the recent acts of the legislature. This Board is supposed to investigate every fire, and ascertain as near as possible, the cause, and upon its investigation, if enough evidence is obtained to cause it to believe it an arson fire, the case is turned over to the Grand Jury for further investigation. The Board also has authority to make inspection tours over the business section of the city, as well as in the residential section, pointing out any fire hazards that may come to their attention, and see that same is removed. Publicity is given through the newspapers to the most outstanding fire hazards and we include therein just how fire losses affect the community at large, as well as the individual, urging more cooperation from the citizenship in checking up on fire hazards and removing them.

In some instances arrests have been made which resulted in Grand Jury indictments for arson. Since these arrests, our fires have been very few. I feel quite confident that these arrests are going to have a moral effect on any other party, or parties who contemplate arson.

In order to help prevent arson fires, the City Council has offered a standing reward of $250, which will be paid to anyone who can furnish information that will lead to the arrest and conviction of any person guilty of arson.

C. M. Johnson, Chief, Knoxville, Tenn.: We have not had a very noticeable increase in arson fires during the present business depression.

The public has learned through the press that the origin of all fires in Knoxville is carefully and thoroughly investigated.

If there is any evidence of suspicion of arson the interested party or parties are subpoenaed to appear before the Fire Marshal to be questioned.

R. N. Mahon, Chief, Ashtabula, Ohio: Up until 1930 we were having here in Ashtabula, many arson fires. That year we started a campaign against them. We made a list of all arson and unknown fires of the past ten years, and gave each insurance agent a copy of the list, and also all state agents who requested them.

We sent one party to the penitentiary and tried another one, the jury standing eight to four for conviction. We report all arson and suspicious fires to the State Fire Marshal, and try to hold up the insurance as long as possible. As a rule, when it is held up longer than thirty days, they go to a lawyer, which does not leave much profit for them.

Through the cooperation of the Police Department and the city solicitor, we bring in the suspects, and question them, often as many as half a dozen times. We have had the insurance companies hold up the money as long as a year and a half. These things seem to have a good effect, as fires of this sort have decreased in the last two years, from eleven in 1930 to six in 1931.

Every Fire Department should be willing to cooperate in curbing arson fires for we have found, as a rule, such fires occur on bad stormy nights.

William Nill, Chief, Hammond, Ind.: Business depression has not increased arson fires in our city, rather decreased in numbers. In the last eighteen months we had only two arson fires and both offenders were arrested and found guilty in criminal court and sentenced from two to fourteen years. They are now serving time.

The Police Department and the State Fire Marshal's office have cooperated with us in checking arson fires. We have also held up insurance claims for investigation in our attempt to curb arson fires.

We investigate all suspicious fires, and the results of same are published in the local newspaper. This seems to "throw a scare" into people who want to sell out to the insurance companies.

Louis Bausch, Chief, Newark, Ohio: We had two arson fires in 1931, but neither had anything to do with the

business depression. Report of a fire is made to the State Fire Marshal Department immediately, when there is sufficient proof that the fire is of incendiary origin and all facts are investigated by said department.

Lyle E. Burdick, Chief, Adena, Ohio: I am of the firm opinion that the present business depression, together with the decreased real estate values, have increased the number of arson fires.

Most of our fires occur during the nights, and as in most small towns, have considerable headway before being discovered. However, from close observation, I would say that seventy-five per cent of our fires are arsons, although we have not been able to definitely establish the proof of some of them.

We are at loss for a preventative.

The refusal of some insurance companies to write insurance in our town, and the laxness of adjusting claims has helped to repress the increase of arson fires.

Wm. Daggett, Chief, Springfield, Mass.: I have anticipated an increase in the number of arson fires, but really there haven't been any.

The State Department of Public Safety have been and are active. I think that the activities of this department have been successful in causing a cessation of suspicious fires. We have been successful in getting one conviction and several arrests. These seem to have had good effect.

Wm. J. Sands, Chief, Quincy, Mass.: We find that suspicious fires have increased in the residential section of our city, especially in the unoccupied houses. We have been inspecting property regularly and removing the rubbish to help prevent such fires. Up-to-date we have been successful in our effort to avoid suspicious fires.

H. M. Topping, Chief, Whittier, Cal.: The trend of the shady merchant is to deplete stock insured below insurance placed thereon and not to replace stock; thereafter a fire breaks out.

We have been keeping a rigid inspection of business property, watching all loop holes and having fire hazards removed to stop the increase of incendiary fires. This method has proven quite satisfactory.

M. J. Dunphy, Chief, Sacramento, Cal.: The business depression has caused some arson fires, but not as many as I had anticipated.

The steps taken by this city is—publicity. We report to the newspaper that a fire of incendiary origin has been uncovered and stress the point that a thorough investigation has been started by myself and the Arson Board. I believe we have been successful in curbing the number of fires due to this publicity and to investigations.

Charles H. Fuller, Chief, Fire Dept., Pawtucket, R. I.: We have had a number of fires lately that have looked very suspicious, but have not proved any of them to be deliberately incendiary.

A report of each one of these fires has been turned over to the police and reported to the State Fire Marshal for investigation.

J. H. Harrison, Chief, Brunswick, Ga.: We have noticed a slight increase in arson fires during the business depression.

We have patroled business district, and have made inspections of business and residential section to prevent further increase. We find this method quite successful.

L. R. Morris, Chief, Ames, Iowa: I have looked for a number of suspicious fires during the depression but so far we have had only one. If it was set, the evidence was all gone.

I have instructed my men to check anything that looked suspicious and I always report to the State Fire Marshal anything that looks "off-color" or if there is any evidence.

We have been very lucky in checking the suspicious fires and our losses have been low.

Pete Murphy, Chief, Hastings, Neb.: Business depression has increased the arson fires in our city.

I am having inspections every month — sometimes oftener. I see to it that all electric wires are taken care of and that there are no fuse plugs with pennies back of them. I find that this means has been successful in checking suspicious fires.

Thomas F. Dougherty, Asst. Chief, New York, N. Y.: The business depression has not increased the number of fires. It surprises me to know that we have had less fires. Heretofore we always expected and did get an increase.

We have not taken any extra precaution to prevent arson fires other than is our usual procedure. We just watch for suspicious conditions and report them to our Fire Marshal.

Chief Fire Marshal Brophy has been very successful in checking arson fires. A man who starts a fire in New York has Fire Marshal Brophy to contend with and if he beats the Fire Marshal he is a very lucky man. Chief Brophy's many activities in getting convictions for arson has got them "on the run"!

C. S. Dailey, Chief, Bemidji, Minn: I have found that the depression has caused an increase in the number of arson fires.

We have called the attention of our local insurance agents to over-insurance in an effort to check arson fires.

A. H. Lankford, Chief, Glendale, Cal.: We have found that the business depression has brought an increase in the number of arson fires.

We have investigated each fire more carefully upon finding evidence of a suspicious fire and in some cases have tried to secure convictions

Texarkana May Have Own Radio Station

An application has been made by the Texarkana Fire Department to the Federal Radio Commission for a license to construct and operate a short wave radio station. Several department members have been studying radio transmission and expect to be able to build and operate the station. It will be a self-financed project. The department will also make the station available to the Police Department.

Chart of Fire Department Tools

A large illustrated chart of fire department tools and appliances has been prepared by William E. Patterson, Bureau of Fire, Fire Headquarters, Pittsburgh, Pa. It takes the place of an old chart that Mr. Patterson had prepared some time ago, and shows practically all of the tools commonly used in American fire departments. The chart is of a size suitable for mounting on the wall in a fire station and should prove effective in familiarizing men with the various appliances used in the fire service. Copies of the chart may be secured from Mr. Patterson at two dollars each.

Chief Nissen of Winston-Salem Dead

H. E. Nissen, Chief of Fire Department at Winston-Salem, N. C., for nineteen years, died on November 28 as the result of an automobile accident. The sedan in which he was riding collided with a bus while the Chief was responding to a fire alarm.

The force of the crash hurled the car against an electric power pole. The front door of the sedan was knocked off and both Chief Nissen and his driver were thrown out. The Chief's head was pinned beneath the front fender and badly crushed. He was taken to the City Hospital where he died twenty minutes after the accident without regaining consciousness.

The Late Chief H. E. Nissen

Chief Nissen was born in Winston-Salem, November 22, 1873. He was educated at the Salem schools and as a young man joined a volunteer fire company in Salem. When Winston and Salem were consolidated in May, 1913, Chief Nissen was named to head the combined fire departments, and he has been Chief ever since. He was a member of the I. A. F. C., and the State Association.

The Chief is survived by his widow, a daughter and a brother.

Effective April 1, 1933, Owosso, Mich., will discontinue the rural truck which it had maintained for more than ten years to protect farm property. The Mayor said that it had cost $4,000 a year to maintain the rural fire apparatus, and that the service was not appreciated.

FIRE DEPARTMENT ACTIVITIES

James W. Tucker has been appointed Chief of the Clarendon, Va., Fire Department.

Jacksonville, Fla., is considering the construction of a new fire station to cost about $10,000.

The town council of Schuylkill Haven, Pa., is considering the purchase of new fire equipment.

Ground has been donated to Wheeling, W. Va., on which to erect a new fire station.

Residents of Scio, N. Y., Fire District voted to purchase new fire apparatus at a cost not to exceed $5,000.

A movement has started in Brownsville, Ore., to raise funds for the purchase of a pumper.

All chemical tanks on apparatus of the Allentown, Pa., department are to be replaced by booster tanks.

Bids were opened in Jacksonville, Fla., on the construction of a new fire station in the St. Johns Park section.

Funds are being raised in Throckmorton, Tex., to purchase a hose wagon.

Ixonia Township, Wis., is planning to purchase a 350-gallon Pirsch pumper equipped with a booster tank.

Stevens Point., Wis., is considering the purchase of new fire apparatus. Although the City Council admits that new apparatus is needed, it claims that prices are too high.

Because of shortage of city funds, the Finance Committee of Youngstown, Ohio, has tabled a measure to spend $15,000 for fire apparatus.

Fredonia, N. Y., is contemplating the purchase of a 500-gallon pumper equipped with a 100-gallon booster tank, to replace Ford apparatus now in service.

A statement has been made by R. B. Cousins, Jr., Secretary, Texas Fire Prevention Committee that the fire loss of the state is now equal to the cost of state government.

Mandamus proceedings against the Mayor of Charles City, Ia., were started by a former Chief who contends that he should be awarded the position given to another appointee.

Unless the city provides funds to pay the salaries of eight firemen, Chief Ralph J. Scott of Los Angeles, Cal., stated that he will close the fire station in Tujunga. If the station is closed, a large area will be left unprotected.

A committee has been appointed by Commissioner Dorman of the New York Fire Department to make a survey of fire prevention rules and city ordinances. Many of the present laws were drafted before fireproof buildings were evolved.

Sixty-two cities and towns in Iowa have adopted ordinances prohibiting the sale and indiscriminate use of fireworks. This move followed the disastrous fire in Spencer which started from fireworks.

Emeryville, Cal., has received a new Seagrave ladder truck. It is provided with a 100-gallon capacity booster tank to which is connected a booster pump of 73 gallons per minute capacity.

Police on both sides of the international boundary line are searching for Burton J. Batty, Chief of Fire Department, Sarnia, Ont. Foul play is feared by the Canadian police.

Baldwin, N. Y., defeated the plan to erect a $75,000 fire headquarters to replace the present old building. The Fire Commissioners, the Chamber of Commerce and other organizations were in favor of the new station.

A recommendation has been made by Chief Clyde Scott of Provo, Utah, that the firemen be placed under civil service regulations. It is believed that greater efficiency will result.

Vandalia, Ill., has ordered a Stutz 500-gallon pumper with a 250-gallon booster tank. The Fire Department consists of nineteen volunteer firemen with C. A. Higgins, Chief.

Two new fire stations will soon be erected in Galveston, Tex. The city has authorized the sale of stations occupied by companies 6 and 7. The new stations will be financed with $40,000 made available by a 1929 bond issue.

The State Insurance Commissioner of Minneapolis testified that a sharp increase in arson cases in 1931 prevented him from making the full number of inspection of villages in the state. Deputies have been kept busy investigating arson cases which increased to 284 during the past year.

Rockingham County, Va., has secured a 600-gallon pumper equipped with a 200-gallon booster tank which will be used in fighting rural fires. The apparatus will be placed in charge of Hose Company No. 4 of Harrisonburg which has been answering alarms for the county.

In reviewing his work for the past five years in building stations, Commissioner John J. Dorman of New York City stated that nineteen of the fifty fire houses erected in that period were built in the borough of Queens. Two more structures will be erected—a fire house for the Hollis section and a boathouse in Manhattan.

St. Louis, Mo., Fire Department intends to ask for a supplemental appropriation of about $100,000 to permit the Fire Department to finish its year. The department was allowed $1,899,500 for this fiscal year which began last April. This is $296,000 less than was allowed last year. Strict economy, including a pay cut has failed to keep the department within the appropriation.

A new system of fire records has been started in Eugene, Ore., by Chief Nusbaum A card is kept for each individual who has had a fire, and one is kept for the property itself. Over a period of years, it will give a complete fire history of every man and house in the city. In addition, there will be a cabinet of inspection cards, and there will be periodic inspections of all houses and buildings in the fire area.

P. O. Hebert of Eureka Fire Hose Dead

Paul O. Hebert, Southern Manager of the Eureka Fire Hose Manufacturing Company, since August 1, 1905 and a resident of Atlanta, Ga., for forty years, died at a private hospital on November 28, following an illness of three weeks. He was sixty-five years old.

The Late P. O. Hebert

Mr. Hebert was born at White Castle Plantation, Louisiana, September 30, 1867. His father was ex-governor of Louisiana. He received his early education at Bayou Goula, La., and his later schooling at Spring Hill College, at Mobile, Ala., and at Rensselaer Polytechnic Institute, Troy, N. Y., where he received the degree of Civil Engineer. Following his graduation he engaged in engineering and construction throughout the south, and built a number of water works systems. He specialized in fire protection for municipalities.

On August 1, 1905, Mr. Hebert joined the Eureka Fire Hose Manufacturing Company as its Southern Manager. He served in that capacity until his death.

Mr. Hebert was widely known socially as well as through his business connections. He was a member of the Piedmont Driving Club, the Capital City Club, B. P. O. Elks, and a member of the Sacred Heart Catholic Church.

Surviving him are his widow, a daughter, two sisters and two grandsons.

Funeral services were held November 30 at the Sacred Heart Church and interment was made in the West View Cemetery.

Pallbearers included Chief D. W. Brosnan, Albany, Ga.; Dr. J. E. Paulin, J. F. Dickinson, H. L. DeGive, J. O. Eaves and H. H. Timmerman. The honorary escort consisted of Henry B. Kennedy, Charles Wilkinson, Steve R. Johnston, Thomas O. Stewart, J. S. Procter, J. S. Brockwell, J. R. Housley, all of Atlanta, Chief J. L. Akin, Birmingham, Ala.; T. W. Haney, Ex-Chief, Jacksonville, Fla.; Chief D. White, Florence, Ala.; Commissioner John H. Taylor, Birmingham, Ala., and Joseph H. Green, President, Eureka Fire Hose Manufacturing Company, New York City.

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COMBINATION BRASS NOZZLE FOR 50 FOOT STREAM OR LONG COARSE SPRAY
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EAGLE FIRE HOSE

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The past fifty-seven years have taught us much in our continual war against fire. They have shown us that there *is* a difference in fire hose—and that difference is in favor of EUREKA.

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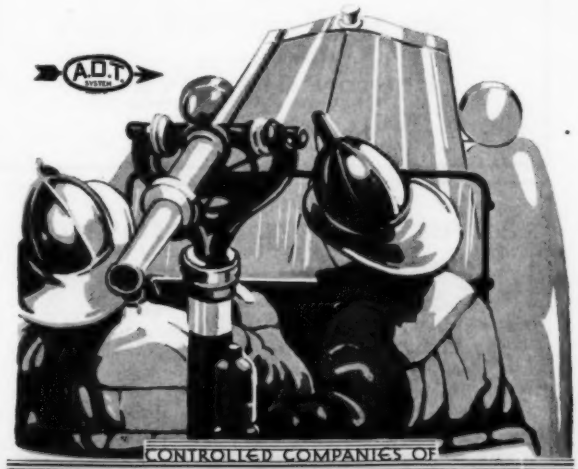
A. D. T. Central Station Service gives them minute-by-minute supervision. Closed gate valves, leaks, danger of freezing, low air pressures, low water in gravity tanks and all other dangerous conditions are detected and reported instantly.

...And when water flows from the system, the Fire Department can rely on receiving an *immediate* signal...because A. D. T. systems are CONSTANTLY SUPERVISED and PROPERLY MAINTAINED.



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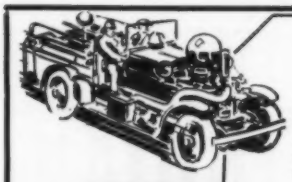

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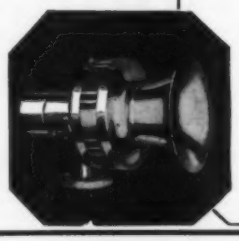

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Wax Treated - Solid Multiple Woven
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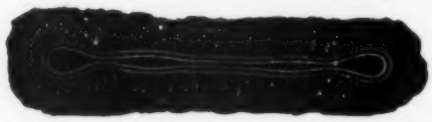

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is a portable turret pipe that can be used on the ground or mounted on the apparatus. This photo shows our three - way gun used on the ground, connected to two lines of hose. This gun may be furnished with either two-way, three-way or four-way Siamese, as desired.

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Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified

High Pressure Hydrant Discharge, Etc.

To the Editor:

(1) Accepting the rated capacity of a pumping engine at 700 gallons of water per minute at 120 pounds pressure what would a pressure gauge read in order to give rated capacity when there is 40 pounds pressure on a hydrant? In other words does the hydrant pressure have to be added to the rated engine pressure in order to give rated capacity?

The contention is that when a pumper stops at a hydrant and goes into operation the pressure gauge must read 160 pounds pressure in order to give rated capacity, if the hydrant pressure is normally 40 pounds.

(2) Some of the more experienced members of the fire department contend that one high pressure hydrant is equal to 4 pumpers of the second size.

Some say that a high pressure hydrant is only capable of discharging about 4,500 gallons of water per minute through four 3-inch outlets with no hose attached; while others contend that by applying the formula .80 x 30 x D x D x the square root of the nozzle pressure, 9,546 gallons per minute should be the flow, and under this condition, one high pressure hydrant would be equal to about 12 second size pumpers. Please answer specifically whether the above mentioned formula. is applicable to high pressure hydrants and if not, why not, etc. G. P.

Answer 1: With regard to question 1 the full hydrant pressure is not transmitted through the pump to the discharge where a positive displacement pump is employed.

For that reason in figuring the rated capacity of a pumper it should be indeed hard to know at what pressure the engine should be operated in order to give its rated capacity. That is why all tests of pumpers are made from suction that is drafting water from open bodies, where no pressure is provided to help the pump along.

Hydrant pressure, does, however, materially aid a pumper, but to varying degree.

Answer 2: If the water main is of sufficient size to maintain the hydrant pressure, the discharge may be figured by the formula you give. This would mean that a high pressure hydrant would deliver 9,546 g.p.m. under specifications you cite. However, it should be remembered that water delivered from a high pressure hydrant under such conditions would have to be delivered through open butts. If hose lines were attached to the hydrant, then you would have a back pressure built up which would materially decrease the discharge from the hydrant. If pumpers were used on a hydrant, it is very likely that they would be able to draw the full quality of water as per your calculation, from the hydrant, providing the supply was maintained with a constant pressure at the hydrant.

If the hydrant is attached to a comparatively small main of considerable length then as soon as the water begins to flow the pressure would drop appreciably.

Humidity and Wind

To the Editor:

I would be interested in knowing just what humidity has to do with fire and what relation the wind has to fire fighting. D. F. A.

Answer: Humidity has a very definite effect upon the fighting of a large fire. Where the humidity is high, smoke and gases accumulate along the street and make it difficult for the men to operate. Ventilation is also slowed down by heavy humidity.

Where wind is blowing, attention must be directed particularly to the buildings to the lee of the fire to prevent extension of fire thereto. Wind will drive the heated gases emanating from a fire toward a building, and frequently cause extension of the fire to other structures thereby.

Freezing of Suction Pipes

To the Editor:

If a metal pipe is placed in a body of fresh water for the purpose of taking suction, will the pipe burst if ice forms in it in winter?

We have numerous pipes of this type along the water front and they are in salt water and work very fine. We have found that they could be used at numerous plants and premises where there are ponds, lakes, or other bodies of fresh water. One plant we have in mind has no hydrants within a mile. Such an arrangement would save time in making up in water expense where water is metered and give a greater flow of water. If the pipes would freeze and crack they would be of no use in the winter and when cracked may not show and therefore would be of no use for suction in summer. Of course they could be thawed out quickly with a thawing device.

This pipe would be at least 2 feet below water level and at least 2 feet off the bottom; this would leave an air space in the pipe above where the ice would form and of course water would be below the ice in the pipe. Would the expansion take place in the air space above the ice and in the water below the ice, or would the pipe crack and be useless? H. J.

Answer: There should be no danger of pipe such as you describe being burst by freezing water. As a matter of fact, water mains freeze from time to time, but it is a rare happening to have them crack or burst. As long as the water is not confined by the pipe with no opportunity to escape out of either end, freezing pressures are kept down.

Capacity of Engine

To the Editor:

Would appreciate it if you will answer the following question:

What would be the result if a 500 gallon rotary pump, not in the best of condition was hooked up to a hydrant with 4½ inch suction and expected to supply three lines of hose each 300 feet in length one line equipped with a 1¼ inch tip and two lines equipped with 1-inch tips? The static pressure on this hydrant varies from 25 to 50 pounds and is supplied through a four inch main. Is this hookup expecting too much of the pump? Would the output and efficiency be dependent on the hydrant pressure? What hookup, that is how many lines and what size tips would you recommend using under the above conditions? Under the conditions set forth above, what pump speed would be the best to pump in, pressure or capacity? G. J. F.

Answer: If the 500 gallon pumper was hooked up to the hydrant, fed by 4½-inch suction, to supply three lines of hose each 300 feet, and equipped with 1¼-inch, 1 inch and 1 inch tips it would be found that satisfactory nozzle pressure could not be secured. 40 pounds is considered about the

minimum for satisfactory operation, and the discharge from two 1 inch nozzles and one 1¼-inch nozzle at 40 pounds would be 667 gallons per minute. Furthermore, it is possible that the 4-inch main feeding the hydrant would not be able to supply this quantity, particularly if the 4-inch line was of great length and fed only at one end.

This hook-up is certainly expecting too much of the pump.

With reference to the effect of hydrant pressure on output and efficiency, the hydrant pressure would materially affect the output, but if it supplied plenty of water to the engine, it would not affect its efficiency.

If the engine was helped appreciably by the hydrant pressure, three 2½-inch lines each equipped with 1-inch nozzles could be supplied by the engine. But it would be a far better practice to expect only two lines from the engine, 2½-inch in diameter and equipped with 1⅛-inch nozzle.

The pump with the above layout should be operated in "capacity."

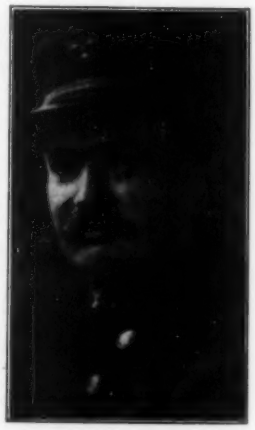
WHAT'S BURNING

THE following list includes fires of $25,000 loss and over in the United States and Canada, for the month of November. These figures, compiled from telegraphic reports are based on estimates made at the time, and are subject to later investigation and consequent revision. Taken as a whole, however, they are an approximately correct view of the losses incurred. The figures represent loss in thousands of dollars.

Month Ending November 30	Loss in Thousands of Dollars
Sugar Notch, Pa.—Swedish Lutheran Church and adj. property	50
Cedar Falls, Iowa—Hughes dept. store damaged	65
Atlanta, Kan.—Methodist Church, adj. business property	25
Prescott, Ont.—Prescott Public School building destroyed	50
San Francisco, Cal.—Pump house on W. H. Crocker estate	25
Santa Rosa, Cal.—Fruit packing plant of Grace Bros.	30
Vancouver, B. C.—Plant of Vancouver Supply Co.	25
Jefferson City, Mo.—Lee Tire Chain factory damaged	40
Luxemburg, Md.—Lemay Theatre destroyed	25
Catawissa, Pa.—Plant of Central Forging Co. damaged	80
Watsonville, Cal.—Packing shed of L. G. Bachan Co. damaged	25
Malone, N. Y.—Smerlie restaurant on East Main St.	25
Pomassan, Ont.—Store of T. H. Reid destroyed	30
Indiana, Pa.—Two school buildings, 18 mi. southwest	25
Schuylerville, N. Y.—Gates Hotel damaged	25
Emporia, Va.—Panel mill of Interstate Veneer Co. destroyed	80
Pompton Lakes, N. J.—Colonial Theatre destroyed	50
Moncton, N. B.—Stores and apts. in Mable block damaged	30
Bonham, Tex.—Plant of Steger Flour Mill destroyed	65
Darlington, S. Car.—Trinity M. E. Church damaged	25
Mathews, Va.—Lee-Jackson High School destroyed	25
Phoenixville, Pa.—Barn on Gen. W. W. Atterbury estate	45
Lynchburg, Va.—Spanish mission building damaged	25
Paris, Ill.—Gas plant of Central Illinois Public Ser. Co.	25
Great Neck, N. Y.—Preston Hall destroyed, Dr. P. P. Satterwhite.	800
Antigonish, N. S.—Five buildings destroyed	65
Bristol, Vt.—Business building owned by Hatch estate	25
Edwardsville, Ill.—Dwelling of Mrs. W. M. Warnock destroyed	25
Gastonia, N. C.—Plant of Gastonia Steam Laundry Co.	45
Washington, Pa.—Beth Ayres art glass studio destroyed	80
Montreal, Que., Can.—St. Vincent De Paul penitentiary	350
Campbell's Bay, Que.—Moyle Hotel destroyed	25
Ellenville, N. Y.—High View Hotel destroyed	25
Hugo, Okla.—Elevator of Continental Oil Co., adj. property	30
Baltimore, Md.—Whse. of J. R. M. Adams hardware store	80
Peabody, Mass.—Plant of Amdur-Limon Leather Co. destroyed	400
Oakland, Cal.—Planing mill of Hilderbrand Bros.	65
Needham, Mass.—Dwelling of Arthur L. Richmond damaged	30
Milwaukee, Wis.—Clubhouse of Woodment Country Club destroyed	65
St. Hyacinthe, Que.—Building of S. Bourgeois & Co.	25
Seattle, Wash.—Plant and whse. of W. R. Lebo Co.	45
Riverton, Vt.—Davis Brothers granite plant destroyed	65
Alfred, N. Y.—Dormitory at Alfred University destroyed	100
Little Rock, Ark.—East Side Junior High School damaged	25
Ripley, Ohio—Garage of Blackburn & Milligan destroyed	65
Sumner, Iowa—Creamery whse. of Pennington & McGuiness	25
Cincinnati, Ohio—Plant of Grippo Cone & Pretzel Co.	45
Northboro, Mass.—Dairy plant of Herman Sparrow destroyed	25
Lebret, Sask.—Qu'Appelle R. C. Indian School destroyed	200
Marinette, Wis.—Marinette & Menominee Box Co. plant	25
Waltham, Mass.—Chancey Newhall grammar school	25
Cuttyhunk, Mass.—Property on C. A. Wood estate	25
Terre Haute, Ind.—Elevator and freight cars of Terre Haute Terminal Grain Corp.	80
Streator, Ill.—Canning plant of C. S. Crary Co.	80
Osceola, Ark.—Osceola Inn, Mrs. A. Driver, owner	25
Danbury Mass.—Five business bldgs. destroyed	160
New Bern, N. Car.—Turner-Tolson furniture store	45
Eureka Springs, Ark.—Southern Hotel destroyed	50
Bedford, Ind.—Von Ritz Theatre bldg., adj. property	50
Woodville, Miss.—Smith Baker and Treppendahl whse.	25
Withamsville, Ohio—General store of Mando Cutts destroyed	25
Elizabethton, Tenn.—Carter County Court House destroyed	40
Anaheim, Cal.—Plant of Consolidated Ice & Coal Storage Co.	100
King's Mountain, N. C.—School bldg. destroyed	50
Snowy Springs, Sask.—Pump house destroyed	25
San Francisco, Cal.—Bldg. of Nevel Bros. Van & Storage Co.	25
So. Norwalk, Conn.—F. W. Woolworth Co. store destroyed	80
W. Frankfort, Ill.—Six business buildings destroyed	150
Stillwater, Okla.—Animal husbandry bldg., A. & M. College	25
London Ont.—A. S. Wray Jewelry Co. store adj. property	40
Chelsea, S. Dak.—Post office, store and garage destroyed	45
Wilmington, Cal.—Plant of Vegetable Products Co. damaged	45
Hallowell, Me.—Fire station and apt. of O. H. Sproul	25
Asbury Park, N. J.—Dairy buildings of S. A. Wertheim	80
Bassett, Va.—Two units of Bassett Furniture Co. plant	250
Buffalo, N. Y.—Property of Webb Belting Co. and Osgood Mch. Co.	125
Woodside, N. Y.—Plant of Agricultural Cast Stone Co.	50
St. Louis, Mo.—Plant of Southern Equipment Co. destroyed	40
Danbury, Conn.—Several bldgs. of Eastern Fur Products Co.	150
High Point, N. C.—Hutchins grocery, Washington St.	45
Centre Islip, N. Y.—Summer home of G. M. Armsby destroyed	65
Dalton, Ga.—Acme Apartments, North Thornton Ave.	25
West Frankfort, Ill.—Building of Central Illinois Pub. Service Co., adj. property	160
Newark, Ohio—Plant of Owens-Illinois Bottle Mfg. Co.	25
Eldora, Iowa—Post office and other property	70
Gulfport, Miss.—Bldg. of Gulf Coast Military Academy	25
Cleveland, Miss—Piknik grocery and adj. property	65
Brigham City, Utah—Whse. of Utah-Idaho Sugar Co. destroyed	200
St. Sauveur, Que.—Property on Kirousac St. owned by Dion estate.	25
Allen, Neb.—Crystal Lake Hatcheries, adj. property	25
Marengo, Ill.—Four buildings on Main Street	45
Landsowne, Pa.—Whse. of Fleck Bros. Co., other property	125
Grand Rapids, Mich.—Elias block destroyed	25
Glendive, Mont.—Reynolds business block damaged	80
Clarksboro, N. J.—E. A. Stroayk garage damaged	80
Dent, Minn.—Dwelling and two stores destroyed	25
Oswego, N. Y.—Business block damaged	45
Milton Junction, Wis.—Dormitory of Alfred University	100
Alpena, Mich.—Alpena County Court House damaged	25
Redding, Cal.—Hersey garage destroyed, adj. property damaged	80
Vegreville, Alta.—Garage and implement warehouse destroyed	25
E. Northport, N. Y.—Jacob Patarsky garage, adj. building	80
Mebane, N. C.—Whse. owned by Carl Forest, other property	35
Panama City, Fla.—Pines Hotel destroyed	45
San Francisco, Cal.—10th floor of Apparel Center Bldg. damaged	35
Lawrence North, N. Y.—Burnside Villa, adj. property	25
Dansville, N. Y.—Steigler shoe store, Main St.	25
Paramus N. J.—El Dorado restaurant, Highway 4	35
Marengo, Wis.—Property in business section	35
Rochester, Minn.—Franklin Heating Station damaged	80
Stokesland, Va.—Plant of Piedmont Lumber Co.	25
Moultonboro, N. H.—Property of J. A. Green estate	80
Harvey, Ill.—Stevenson bldg. on Center Ave.	25
Cedar Rapids, Iowa—Whse. of Castone Products Co.	45
Somerset, Pa.—Switch tower of B. & O. R. R.	65
Coehurn, Va.—Winchester Hotel and adj. property	200
Greensburg, Ky.—Wilson bldg. destroyed	35
Centralia, Wash.—Plant of Eastern Railway & Lumber Co.	200
Bayonne, N. J.—Greenberg store, and Morris store	45
Lexington, Ky.—Barn on Spring Lake Farm, 7 mi. out	25
Unionville, N. Y.—Barn and stock of W. H. Beemer	35
Hingham, Mass.—Lobster house, bathhouse, several boats	25
Montgomery Ala.—Methodist church destroyed	250

Chief August Emrich Retires From Service

August Emrich, seventy years old, a fire-fighter for forty-nine years, and head of the Baltimore, Md., Fire Department for twenty years, retired from the service on November 15. He retired on his own request because he had reached the age limit. In September he went on a month's vacation and secured a leave of absence until November 15.



Ex-Chief August Emrich

Chief Emrich was an unpaid substitute back in 1883 when he was in the coal busines. On June 6, 1884, he was appointed a regular fireman and was paid $1.10 a day. He was advanced to Lieutenant on January 1, 1891; Captain, March 1, 1895; Battalion Chief, April 1, 1896; Deputy Chief, January 1, 1909; Chief of Fire Department, March 2, 1912. He is State Vice-President of the International Association of Fire Chiefs.

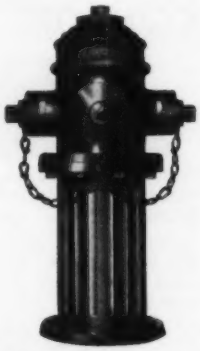
The Baltimore Conflagration of 1904 gave Chief Emrich his hardest fight. When Chief Horton was injured, Chief Emrich, at that time a Deputy Chief, assumed command and he worked steadily for a week, except for small snatches of sleep, until the conflagration was fully under control.

Some of the improvements that Chief Emrich had established were a marine division, a high pressure water system, and a two-platoon system.

Deputy Chief John Kahl has been Acting Chief in the absence of Chief Emrich. Mr. Emrich has no plans for the future, although he talks of taking a trip to the coast or to Europe.

Salvage covers have been added to the equipment of the Longview, Tex., Fire Department.

Here's why FIRE CHIEFS recommend



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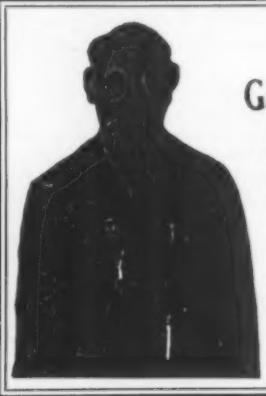

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, of FIRE ENGINEERING, published monthly at New York, N. Y., for October 1, 1932.

State of New York }
County of New York } ss.:

Before me, a Notary Public in and for the state and county aforesaid, personally appeared I. H. Case, who, having been duly sworn according to law, deposes and says that he is the Business Manager of Fire Engineering and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption required by the Act of Congress of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Case-Shepperd-Mann Publishing Corporation, 24 West 40th Street, New York City. Editor—Fred'k Shepperd, 24 West 40th Street, New York City. Managing Editor—Fred'k Shepperd, 24 West 40th Street, New York City. Business Manager—I. H. Case, 24 West 40th Street, New York City.

2. That the owner is: Case-Shepperd-Mann Publishing Corporation, 24 West 40th Street, New York City. I. H. Case, 24 West 40th Street, New York City. Frederick Shepperd, 24 West 40th Street, New York City. Karl M. Mann, 24 West 40th Street, New York City.

3. That the known bondholders, mortgagees, and other security holders, owning or holding one per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

I. H. CASE,
Business Manager.

Sworn to and subscribed before me this 26th day of September, 1932.

[S E A L] ELLEN E. DUNCANSON.

(My commission expires March 30, 1934.) *Notary Public.*

HOW TO FIGHT FIRES WHICH INVOLVE CHEMICAL HAZARDS

Discussion of Miscellaneous Chemical Solids Encountered by Firemen and Some of the Explosive Materials

By Lionel K. Arnold
Assistant Chemical Engineer, Engineering Experiment Station and

Lindon J. Murphy
Municipal Engineer, Engineering Extension Service, Iowa State College

For the accompanying article, the final installment of which is published herewith, FIRE ENGINEERING *is indebted to the Official Publication of the Iowa State College of Agriculture and Mechanic Arts, it being comprised in Bulletin No. 9, Engineering Extension Service:*

EXPLOSIVES are materials which may be caused to expand with destructive violence by heat or shock. Commercial explosives are liquids or solids which are changed upon exploding into large volumes of gases the sudden expansion in volume exerting the destructive pressure.

Two general types of explosives are in common use.

Black powder which is typical of one class, is made up of powdered sulphur and charcoal mixed with either potassium or sodium nitrate and is fired by ignition. The action that takes place is merely a rapid burning in which the oxygen is supplied by the nitrate so that air is unnecessary. When unconfined it will burn without destructive violence. Although gunpowder contains its own oxygen, fires in the bulk material may be extinguished with water, since the water dissolves out the nitrate, rendering it ineffective.

The other type of explosives are mainly organic nitrates such as **nitroglycerine, trinitrotoluol,** or **dynamite** which are exploded by percussion but which also may be **exploded** by high temperatures. These materials burn at a temperature below the exploding temperature but of course the burning may raise the temperature to the explosion point. Dynamite will sometimes go through a fire without exploding but no dependence can be placed on its doing so. Nitroglycerine or dynamite give off poisonous fumes when burning or exploding, the burning material giving the greater amount.

Where explosives are likely to be involved in a fire they should be removed if possible before the fire reaches them. Unless burning embers come in contact with the explosives there is little danger of detonation by moderate heat. In many cases it will be possible to keep the temperature of the explosives down by liberal use of water.

Miscellaneous Chemical Solids

Calcium carbide is usually shipped and stored in sheet steel drums. With water it produces the explosive gas acetylene.

If during a fire the drums should become damaged exposing the carbide, water should be kept away. If kept dry it is not inflammable and is not affected by fire. Carbon tetrachloride (Pyrene) can be used.

Phosphorus needs quite the opposite treatment from that given potassium or sodium. It must be kept wet or away from air to prevent ignition. If allowed to dry, it spontaneously bursts into flame evolving very poisonous fumes. It is frequently stored under water although it may be kept in air tight cans. It is used mainly in the manufacture of matches.

Picric acid is usually shipped in the form of yellow crystals in wooden kegs. It is very poisonous, and is explosive in contact with metals or metallic oxides or under fire conditions. It is used in the manufacture of explosives, dyeing and preparation of certain medicines. When known to be present in a fire it should be kept thoroughly drenched with water.

Sulphur is shipped and stored as yellow lumps or powder in barrels or in bulk. It burns with a blue flame producing the poisonous sulphur dioxide and sulphur trioxide fumes. Water and chemicals may be used on it.

Celluloid, photo films, moving picture films, and X-ray films are usually composed of nitrocellulose, camphor, and a stabilizing material. The so called "safety films" contain cellulose acetate instead of cellulose nitrate. The cellulose nitrate films are very flammable igniting at low temperatures. Contact with a hot steam pipe is sufficient to ignite. When burning, the film gives off the very poisonous nitrous oxide fumes. The cellulose acetate films do not burn readily and do not produce the nitrous oxide fumes.

The most effective means of fighting a film fire is to use large amounts of water so as to cool down the film. The use of fire extinguishers to cut off the oxygen supply is not effective since the nitrate contains oxygen sufficient to continue the combustion. After extinguishing the fire the films remaining should be removed and kept under observation to prevent recurrent combustion.

Little dependence should be given the regulation canister type fireman's gas masks to protect against nitrous oxide fumes since they are effective for only a few minutes. An oxygen helmet should be used. Persons known or suspected of being gassed should be given immediate medical attention.

Films should be stored only in an approved outside storage vault constructed according to specifications of the National Board of Fire Underwriters and free from steam pipes or radiators and any but permanently wired electric lights. Automatic sprinklers should be installed.

Officer Trapped by Store Fire

Capt. Charles Beiswenger, of the Wheeling, W. Va., Fire Department was killed, and three firemen were overcome at a store fire discovered at 8:00 p.m. The store occupied the first floor of a three-story building of which the second and third were untenanted. The fire was discovered during the progress of a political parade. The officer was on the third floor of the building supervising operations when he collapsed. He was without a mask and was overcome by smoke.

Capt. Beiswenger was fifty-six years old and a member of the department since 1914.

Iowa Chiefs Name Legislative Committee

In accordance with the wishes of the Iowa Fire Chiefs' Association, as expressed at the last meeting, Chief H. J. Callahan of Fort Dodge, who is President, has named a Legislative Committee to serve during the coming session of the Iowa Legislature.

Chiefs of this committee are F. D. Milligan, Jefferson, Chairman; Will Burnett, Des Moines, Vice-Chairman; Bernard Meaney, Ottumwa; M. T. Gunderson, Oelwein; Bob Miller, Spirit Lake; Frank Ostertag, Burlington; Dan Shire, Mason City and Wright Hedges, Atlantic.

The committee is formed to keep a close watch on all legislation that may be proposed affecting firemen and fire departments. It will try to have bills introduced that will benefit fire departments and the members thereof.

Commissioner Estabrook Dead

Fire Commissioner Willard W. Estabrook, of Brookline, Mass., died on December 3 at the Deaconess Hospital after a fall in his home the previous day when he suffered a broken hip.

He was born October 5, 1867. He was a graduate of the Massachusetts Institute of Technology and had served as Fire Commissioner in the town of Brookline for twenty-eight years, having been reappointed last summer for a three-year term.

He was a 32nd degree Mason and was a member of the Fire Chiefs' Club of Massachusetts, the Box 52 Association of Boston, the New England Association of Fire Chiefs, and the International Association of Fire Chiefs.

Funeral services were held on Monday afternoon, December 5, in his late residence, 31 Parkman Street, Brookline. The Rev. Abbott Peterson, of the First Parish Unitarian Church, of Brookline, officiated.

There was a large attendance of fire chiefs and city officials at the services. The floral tributes were many and varied, testifying to the love and respect in which Mr. Estabrook was held by all who knew him. Burial was in Forest Hills Cemetery.

HARRY BELKNAP.

Williamsdale, Ohio, opened its new fire house which is completely furnished. It contains a dining room, kitchen, and a meeting hall.

Cairns & Bros., well-known manufacturers of firemen's helmets and other equipment, have moved to 444 Lafayette Street, New York City. They have been established since 1836, and have been located in their old Grand Street neighborhood for over ninety years.

PROPOSED IMPROVEMENTS

Lowell, Mass.—Early and definite action urged toward improving the fire alarm system. Charles H. Slowey, Mayor.

South Belmar, N. J.—Fire department being organized here.

Wanted

One used Gamewell Electrically Actuated Fire Alarm Box. The Mansfield Tire & Rubber Company, Mansfield, Ohio.

Canoga Park, Calif.—Fire Commn. approved plan which calls for manning and equipping new fire station provided by city council here.

Medford, Mass.—New pumper to be purchased to be stationed at new fire station nearing completion, in North Medford, according to reports.

Jeffersonville, N. Y.—Reports state purchase of new pumper will be discussed at December meeting of the Jeffersonville Fire District.

CONVENTION DATES

Jan., 1933—SOUTHERN CALIFORNIA FIRE CHIEFS' CLUB. Semi-annual Meeting. Secretary-Treasurer, Chief Charles E. Smith, Chula Vista, Cal.

May, 1933—DEL-MAR-VA VOLUNTEER FIREMEN'S ASSOCIATION. 4th Annual Convention, Easton, Md. (Exact date to be decided later.) Secretary, A. C. Bailey, Laurel, Del.

June, 1933—KANSAS STATE FIRE CHIEFS' AND FIREMEN'S ASSOCIATIONS. Conventions to be held at Wichita, during month of June. Also during June Associations will conduct ten one-day fire schools in ten different towns; first one in Seneca, Kan. Secretary, Chief K. D. Doyle, Wamego, Kan.

June, 1933—NORTH DAKOTA FIREMEN'S ASSOCIATION. 49th Annual Convention, Carrington, N. Dak. (Exact date to be decided later.) Secretary, H. L. Reade, Bismarck, N. D.

June, 1933—SIX COUNTY FIREMEN'S ASSOCIATION. Annual Convention, Carbondale, Pa. Secretary Fred Zeiser, Shamokin, Pa.

June 5-7, 1933—NEW MEXICO STATE FIREMEN'S ASSOCIATION. 11th Annual Convention and Fire College, Las Cruces, N. M. Secretary-Treasurer, T. A. Rosenwald, Albuquerque, N. M.

July, 1933—WEST VIRGINIA STATE FIRE CHIEFS' ASSOCIATION. 2nd Annual Convention, Morgantown, W. Va. (Exact date to be decided later.) Secretary, Chief C. J. Powell, Romney, W. Va.

July 18-19, 1933—MARITIME FIRE CHIEFS' ASSOCIATION. 19th Annual Convention, Digby, N. S., Can. Secretary-Treasurer, Captain Kenneth J. MacRae, Puggsley Bldg., St. John, N. B.

Sept. 1933—KENTUCKY FIREMEN'S ASSOCIATION. Three-day convention, exact date to be set later. Secretary, Capt. S. G. Render, 940 Starks Bldg., Louisville, Ky.

Newly Elected Chiefs

The following have been elected to head the Fire Departments in their respective municipalities:

Staphope, N. J.—H. H. Leavy.
Belmar, N. J.—Carl Schroeder.
Westminster, Cal.—Francis Penhall.
Terra Alta, W. Va.—Frank Zeller.
Cornwall-on-Hudson, N. Y.—Irving Kent.
Macon, Ga.—V. C. Shepard.
Orangeburg, N. Y.—Edgar P. Blakeney.
Pascagoula, Miss.—George J. Grandland.
Preston, Ia.—Albert Stoltz
Central Lake, Mich.—J. M. Mathers
Fairlawn, N. J.—John Marshal
Philipsburg, Pa.—Tom Gennicks
Stanhope, N. J.—H. H. Leavy
Belmar, N. J.—Carl Schroeder
Terra Alta, W. Va.—Frank Zeller
Cornwall-on-Hudson, N. Y.—Irving Kent
Brewster, Wash.—Bruce Plemmens
Northfield, N. J.—John Howell.
Eufala, Ala.—Ralph Richards.
Cambridge, Md.—Russell C. Spear.
Patchogue, N. Y.—Frank Ransome.
Issaquah, Wash.—R. Castagno.
Fontana, Wis.—Ed Crandall.
Gonzales, Cal.—Ben Gotsinger.
New Bloomfield, Pa.—J. Walker Snyder.
Centerport, N. Y.—Byron Nichols.

Walworth County Officers Re-Elected

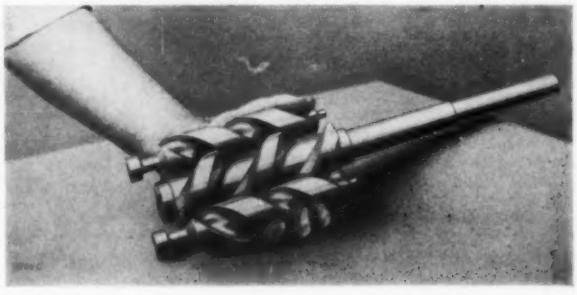
The annual meeting of the Walworth County Fire Officer's Association, was held at Delavan, Wis., October 7. There was an attendance of forty-three members, from Delavan City, Delavan Lake, Darien, Clinton, Sharon, Williams Bay, Walworth and Lake Geneva. The guest of the evening was V. G. Rutter, Engineer, Wisconsin Insurance Rating Bureau, whose address was of great interest to all. A free discussion followed bringing out many points.

The business meeting resulted in the re-election of the old officers. These are C. V. Bachelle, Chief of Delavan Lake Fire Department, President; H. O. Gardner, Chief, Delavan City Fire Department, Vice-President; H. A. Heyer, Chief, Darien, Secretary-Treasurer. The officers and committees were urged to continue the work they started, namely, co-operation between various departments; the development of systematic drills, and the program of instruction and education. The meeting was concluded with a dinner.

A New Form of Rotary Displacement Pump

Many radically new features are embodied in a new type of rotary displacement pump suitable for fire apparatus, developed by the De Laval Steam Turbine Company, Trenton, N. J.

Power is applied to a central rotor which meshes with one or more sealing rotors of such form that they are

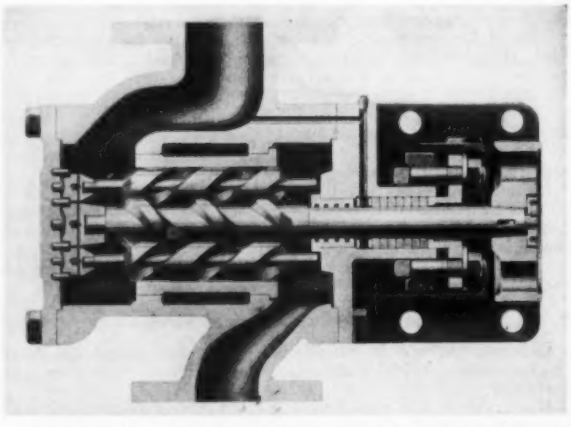


Working Parts of the De Laval-Imo Pump

The photograph shows the impeller and sealing members in relative operating positions.

propelled largely by fluid pressure with a minimum of mechanical contact. The threads of the power rotor are convex while those of the idler rotors are concave. There are only three moving parts, and except for small thrust buttons to maintain the relative axial positions of the rotors, no separate bearings are used, nor are pilot gears required.

Wear between the teeth at the point of contact dos not affect the operation of the pump. When it occurs on the



Axial Section of the De Laval-Imo Rotary Displacement Pump

outside diameter of the rotors it merely increases the clearance between the rotor and the sleeve in which it rotates. The company claims that at this point no fine clearance is necessary as in most cases what is lost in volumetric efficiency is more than made up in mechanical efficiency as wear occurs, or as the clearance is increased.

Canadian Chiefs Select Peterborough

The annual convention of the Dominion Association of Fire Chiefs will be held in Peterborough, Ont., next summer, at a date to be selected by the Board of Directors. Chief Gimblett of Peterborough has started to make plans to entertain the visitors.

The city is centrally located. It is situated on the Trent Canal and Otonabee River, in the heart of the famous Kawartha Lakes district. Arrangements are being made to have an interesting display of exhibits.

A firemen's relief association has been formed by the volunteer firemen of Ulen, Minn.

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THE newer and better Fire Apparatus. Real dollar value from end to end, by a good, clean, unburdened organization.

Limited amount of territory open for distributors.

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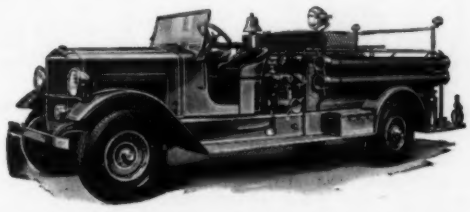

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Made of tough canvas with flannel lining and water-proof interlining. Storm flaps and extra reinforced to shed water. Warm coats as low as— $7.50

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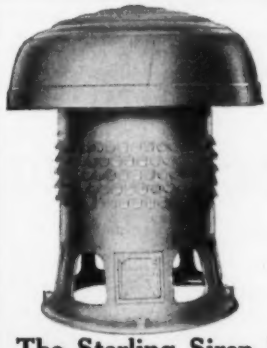

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PUMP HOSE AND LADDER COMBINATION ON CHEVROLET OR FORD TRUCK CHASSIS

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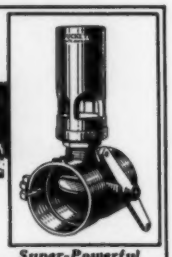

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Super-Powerful BUCKEYE WHISTLE for all types of apparatus or chiefs' cars

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BUCKEYE IRON & BRASS WORKS, Dayton, Ohio

FALSE ALARMS

STOLEN CAR

A quiet town was aroused during the night by the wails of the fire siren. By various means of transportation members of the department rushed to the fire station or to the fire. It was a difficult blaze to fight. Early in the morning one of the firemen, with a reputation of absent-mindedness, returned to his home and drove up in his car to the garage in the rear.

He was surprised to see that his garage was open and his car was out. So he backed out of the driveway, drove rapidly to the police station and reported the theft of his car.

The man who caught the skunk became highly incensed.

EXPECTED TOO MUCH

Flannigan was one type who was conscientious but whose reasoning mechanism did not function at par. When he was taught to lay hose, to force open a door or other departmental functions, he went through the steps merely by imitation. He never questioned why. Flannigan dislocated an arm. The doctor was preparing to give him ether to make the setting less painful.

Flannigan, wanting to know whether he would be able to go home that day, asked:

"How soon will I know anything, Doctor, after I come out of the ether?"

The physician, who knew the background of his patient, replied, "Well, that's expecting a great deal from an anesthetic."

ONIONS AND BABIES

Up in a town in Westchester County, New York, it was the custom for a fire house to be used for the monthly baby welfare conference. Recently, when the doctor and nurse arrived they found an assortment of carnival equipment, and ladies in the kitchen preparing clam chowder for the annual firemen's bazaar. But nevertheless the monthly examination of babies went on.

But it was found a greater percentage of the infants had a tendency to cry, and tears streamed down the cheeks of many of the mothers. The trouble was located in the kitchen. There it was discovered that onions were being ground in large amounts for the clam chowder.

The human brain is the most wonderful thing in the world. It starts to function the moment we get out of bed in the morning and it doesn't stop until we get on the job.

SIMPLE ACCOUNTS

A new fire station was erected in the suburban part of the town. A colored truck operator was given the job of cleaning up the grounds about the new house. He was told to submit an itemized bill of the amount of money due him and he would be paid. The colored man, after much meditation, scribbled out the following bill:

"3 comes and 3 goes at 4 bits a went—$3.00."

Then there's the wife who learned that her husband was leading a double life—so she redoubled.

TOO CAPABLE

A woman living near the outside of the town phoned the fire department that she had a chimney fire. She watched the road anxiously and was surprised to see a fireman drive up in a small chemical car.

"Where's the rest of your company?" she asked.

"The rest?" questioned the firefighter much surprised. "You ain't got but one chimney fire, have you?"

NOW FOR VIEW

Down one street came the apparatus. Down another, with mind on other things, came a young, attractive motorist. A traffic cop blew his whistle and motioned for her to pull up to the curb.

"You have violated a most important traffic rule. I'll have to pinch you."

"Oh, if you must, sir," said the maiden, "please do it where it won't show."

Now we get good janitor service.

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1 Acid Siphons
2 Adaptors for Changing Hydrant Threads
3 Acid Jars and Rings
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14 Battery Zincs for Fire Alarm Batteries
15 Bells, Fire Alarm, Municipal
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17 Boxes, Gongs, Reels, Registers, Fire Alarm
18 Brakes, Air
19 Brake Linings
20 Brooms, Fire
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31 Cutting and Welding Equipment, Electric
32 Deluge Sets
33 Door Openers, Fire Station, Automatic
34 Electric Light Plants
35 Extinguishers, Calcium Chloride
36 Extinguishers, Carbon Dioxide
37 Extinguishers, Soda-Acid
38 Extinguishers, Carbon Tetrachloride
39 Extinguishers, Foam
40 Extinguishers, Powder
41 Fire Boat Nozzle Equipment
42 Fire Department Supplies, General
43 Fire Exit Devices, Door Opening
44 Fire Alarm Posts
45 Fire Escapes, Portable
46 Fire Escapes, Rigid
47 First Aid Equipment
48 Flare Lights
49 Flashlights, Hand
50 Flood Lighting Equipment
51 Foam Generating Apparatus
52 Foam Liquid for Extinguishers
53 Gas Masks and Respirators
54 Gas and Smoke Helmets
55 Gas and Smoke Generators
56 Goggles, Firemen's
57 Helmets, Metal, etc.
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62 Hose, Chemical
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68 Jacks for Fire Trucks
69 Jacks, Shoring and Prying
70 Ladders, Fire
71 Lightning Arresters
72 Motorcycles, Fire Dept. Equipped
73 Nets, Life
74 Nozzles, Pipes and Miscellaneous Brass Goods
75 Packings, Pump
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88 Salvage Covers
89 Searchlights
90 Shingles, Fire Retardant
91 Shirts, Firemen's Special
92 Sirens, Apparatus and Chiefs' Cars
93 Sliding Poles
94 Soda and Acid Chemicals
95 Spark Plugs, Fire Apparatus and Motorcycles
96 Squad and other Auxiliary Cars
97 Sprinkler Head Shut-Offs
98 Sprinkler Supervisory Service
99 Sprinkler Systems, Automatic, Foam
100 Sprinkler Systems, Automatic Water
101 Steam Fire Engines
102 Syphons, Water
103 Tarpaulins and Fire Blankets
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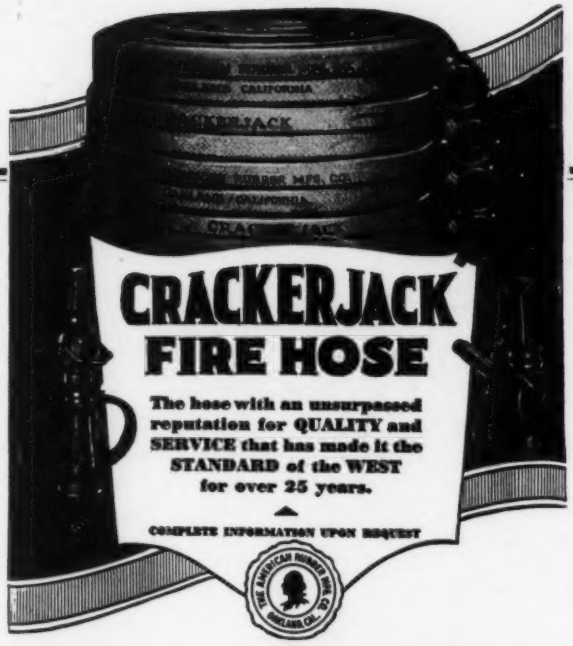
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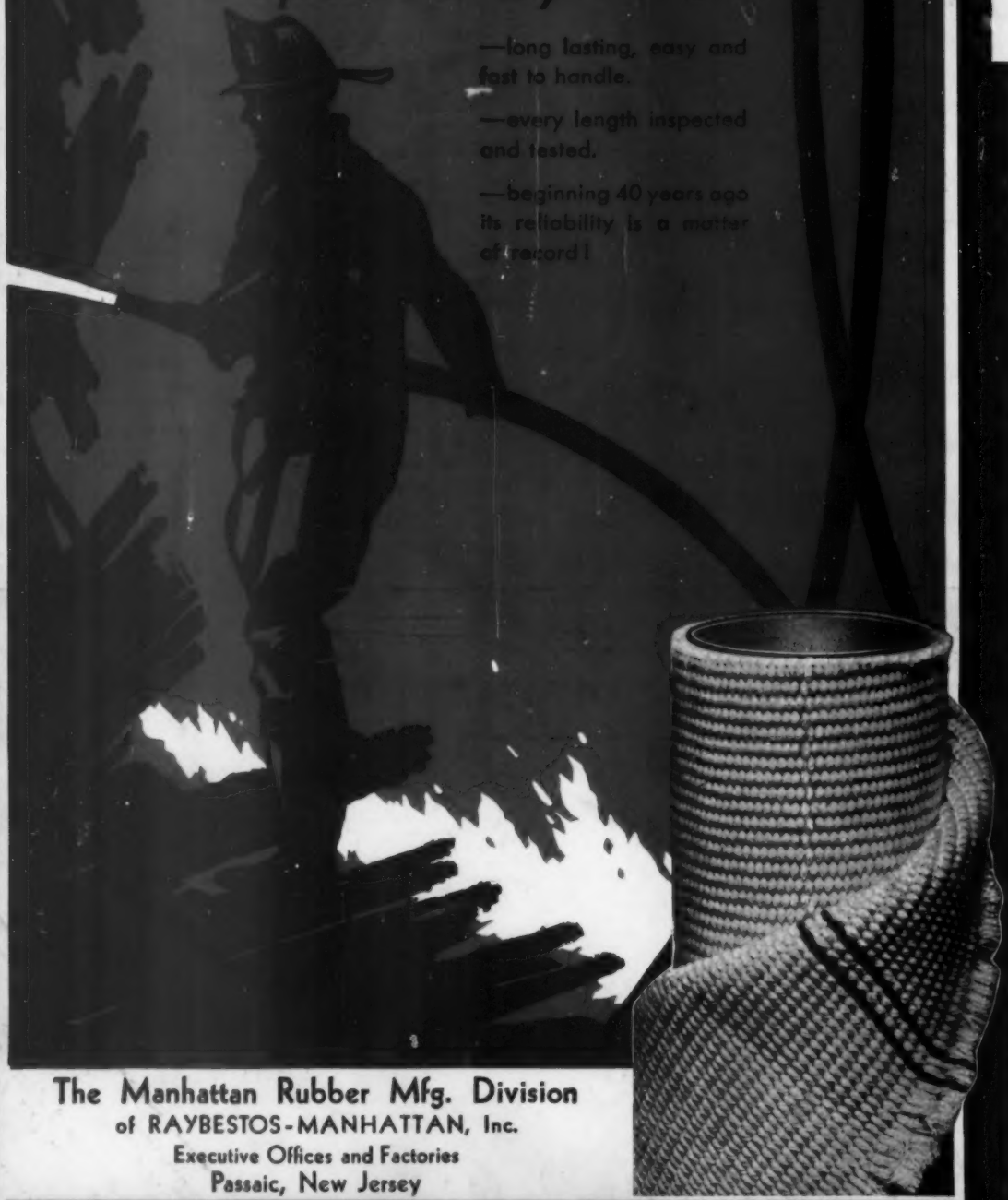

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